REMOTE COMMUNITY ENERGY USE

ENERGY, MINES AND
RESOURCES CANADA

Remote Community
Demonstration Program

ÉNERGIE, MINES ET
RESSOURCES CANADA

Programme de démonstration
pour les collectivités éloignées

REMOTE COMMUNITY ENERGY USE

QUEBEC OVERVIEW STUDY

PAUL BÉLANGER
TRANSTEC
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1.0 INTRODUCTION

Energy use and renewable energy alternatives in remote communities is the primary focus of the Remote Community Demonstration Program (RCDP) of Energy, Mines and Resources Canada.

Remote communities throughout Canada have very high energy expenditures compared with more accessible areas, and most of this energy is derived from oil. Besides the cost of the oil and its transportation to remote locations, there is also the question of energy security, since there are usually fewer options and smaller margins of manoeuvre in these communities as regards alternatives to the supply, transportation and storage of oil products. The vagaries of world oil prices and oil pricing policies has done little to strenghten the tenuous linkage of international oil supply. In view of oil costs and the problem of energy security, Energy, Mines and Ressources Canada has begun to look into practical energy alternatives for electrical generation and home heating in remote communities.

Within the context of the RCDP, a remote community is one which has a year-round population of at least 12 people and which is not connected to the main provincial grid or natural gas pipeline.

This study was commissioned when it became apparent that there was no comprehensive data base on remote communities in Quebec. Because the province covers such a large area, and because there are many government organizations with responsibilities in remote areas, it was important to identify all the energy players involved, determine the scope of their responsibility and find out about their current programs and proposed plans.

This is a first attempt at a comprehensive profile of remote communities in Quebec, and there are obvious gaps. The study has therefore been designed to be put on-line so that information on energy use can be added to or updated on an ongoing basis as it becomes available.

It is hoped that this study will be useful to all who are involved in providing services into Quebec's remote communities. Our thanks are extended to all those who offered help and information and who recognized the needs of the people living in these remote communities:

Lucien Jean, Hydro-Quebec,
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2.0 METHODOLOGY

The objective of the Quebec overview study is to provide the following information:

1. The number and location of remote communities.
2. A socio-economic profile of the community.
3. An energy-profile of the community (limited to electrical generation, home heating and renewable energy options).
4. Role of energy players primarily responsible for energy use in the remote communities
5. Options and priorities in renewable energy development in the remote communities.

The methods employed to achieve this objective were:

1. Survey of existing literature

   A bibliography of general and energy-related studies on Quebec remote communities was prepared. The communities were then grouped into four ecoregions: each one distinguished by its geological, biophysical and climatological characteristics. In addition, each ecoregion has particular cultural and linguistic features.

   It was found that some ecoregions had more complete and up-to-date data bases than other. It was therefore decided to prepare a standard format of socio-economic and energy profiles for each community. This would facilitate the comparative analysis of communities and ecoregions, as well as simplify the computerization of data and subsequent data analysis.

2. Consultation with groups of remote communities through their regional governments

   Background information on the RCDP was sent to various regional governments and remote community associations in Quebec. This was a way of saving time and still contacting the RCD? end-users or clients - the remote communities. Telephone calls were then made to arrange meetings with officials so that further information could be obtained. This also enabled representatives of the various governments and associations to express their interests and concerns regarding the issues involved, and it gave them time to analyse their participation and inform their communities of the program.

3. Contacts with the provincial government and para-government organizations

Interviews were scheduled at the Quebec Department of Energy and Resources, Hydro Quebec and other organizations to provide briefings on RCDP and to discuss common areas of interest in program objectives. In view of the large number of provincial departments and organizations responsible for energy use in remote communities, a questionnaire was sent asking these organizations to describe their roles and responsibilities with regard to energy use and to evaluate a list of criteria which could be used to judge the merit of proposals received for funding under the RCDP.

4. Contacts with federal departments

Scheduled interviews and the same questionnaire that was sent to provincial players were used to determine the nature of federal involvement and interest in energy use in remote communities.

3. **EXECUTIVE SUMMARY**

OVERVIEW QUEBEC REMOTE COMMUNITIES

ECOREGION	REMOTE COMMUNITIES	POPULATION	DIESEL	HYDRO	NATIVE	NON-NATIVE	MINING	LUMBER
NOUVEAU QUEBEC	16	6 008	16	0	15	1	1	0
CENTRAL QUEBEC	13	12 297	9	4	7	6	3	2
LOWER NORTH SHORE AND ANTICOSTI	15	5 734	15	0	1	!$	0	0
MAGDALEN ISLANDS	8	14 291	8	0	0	8	0	0
	52	38 330	48	4	23	29	4	2

OVERVIEW OF ENERGY USE QUEBEC REMOTE COMMUNITIES

ECOREGION	ANNUAL DEMAND (MWH)	DIESEL FUEL LITRES	$/L	DIESEL FUEL COST	HEATING FUEL LITRES	$/L	HEATING FUEL COST	TOTAL FUEL/ KILOLITRES	TOTAL FUEL COSTS
NOUVEAU QUEBEC	32 506 683	18 139 620		$ 5 506 207	13 982 914		$ 6 640 664	27 205 674	$12 146 871
CENTRAL QUEBEC	52 256 271	18 727 382		5 536 834	13 719 607		4 275 553	32 446 553	9 812 387
LOWER NORTH SHORE AND ANTICOSTI	30 812 468	11 136 214		3 786 312	5 934 713		1 899 108	17 070 924	5 685 420
MAGDALEN ISLANDS	100 281 520	29 300 140		7 461 753	13 778 504		4 133 551	43 978 644	11 595 304
ECOREGION TOTAL	215 856 94	77 303 356		22 291 106	47 415 738		16 948 876	1 198 080	39 239 982

4.0 QUEBEC ECOREGIONS

The province of Quebec is a huge land mass with widely differing ecological zones, including Arctic tundra, forests and barren seacoasts. It also has islands 100 miles offshore. The cultural and social spectrum is just as varied, with Inuit communities in the Arctic, Cree, Algonquin, Montagnais and Naskapi communities in the forested regions, Anglophone communities along the Lower North Shore and Francophone villages in the Magdalen Islands.

Quebec remote communities can be grouped according to their ecoregions and sociocultural characteristics:

1.	Nouveau Quebec	- Inuit communities north of the 55th parallel.
2.	Central Quebec	- Native communities on the shores of Hudson Bay and in the James Bay watershed forests.
3.	Lower North Shore	- Native and non-native coastal communities on the North Shore of the St. Lawrence.
4.	Magdalen Islands	- Farming and fishing communities on a group of islands in the middle of the Gulf of St. Lawrence.

NOUVEAU QUEBEC

Nouveau Quebec is an administrative region that covers the northern part of the province. Its 693,000 square kilometres account for almost half the total Quebec land mass. It is an immense plateau with an average altitude of 500 metres and slopes down toward Hudson Bay and Ungava Bay.

The climate is mostly subarctic, except for the Northern Ungava Peninsula, where it is arctic. Degree-days range from 8.000 to 11,000.

There are 13 Inuit communities on the coastal periphery of this huge land area, with a total population of about 6,000. (Table 1) Villages are situated a long way from one another and land transportation links are virtually non-existent.

Nouveau Quebec was defined by the James Bay Agreement, in which native populations gave up their traditional land rights in exchange for financial compensation and certain defined territories. A dissident group of communities is still challenging the Agreement, arguing that they were not duly represented and informed. The Inuit corporation Makivik was created to administer the settlement funds of the James Bay Agreement and to oversee certain aspects of development planning for the region.

On February 10, 1981, the Department of Indian and Northern Affairs handed over entire responsibility for the area to the Government of Quebec. On March 11, the provincial government gave full responsibility for energy production and supply to Hydro Quebec, for housing infrastructure to the Quebec Housing Corporation and for social affairs to the Kativik Regional Government. Provincial administration of the region is conducted through a super-ministry, SAGMAI, which co-ordinates the work of 19 government departments. Public Works and Supply, Municipal Affairs and Social Affairs are the most active of the SAGMAI departments. The administrative capital of Nouveau Quebec is Kuujjuaq (Fort Chimo) and Inoukjuak is an administrative sub-centre for the Hudson Bay coastal communities.

The region has a traditional economy and a Federation of Co-operatives links the 13 communities and offers marketing and distribution services in various sectors. The Nouveau Quebec subsoil is rich in minerals, but so far little has been done to develop these resources. A large asbestos mining operation in Purtunik has reduced its production because of falling demand for asbestos.

A special Hydro Quebec by-law forbids the use of electricity for heating in Nouveau Quebec because of the high cost and low net efficiency of diesel-generated electricity. (Annex 1) The cost of electricity and heating is included in rents and is paid for by the community through the Kativik Regional Government and not by individual residents, so that it is understandable that householders are not yet particularly energy-conscious. Hydro Quebec's administrative and operational costs are almost equal to fuel costs.

Both the Kativik Regional Government and Makivik are becoming increasingly concerned about energy use, and the issues of energy conservation and renewable energy were on the agenda of their March 1982 meeting. A statement of principles on energy utilization and energy development in Nouveau Quebec was presented to the EMR Regional Director and his consultant on September 29, 1982. (Annex 2) The principles stress consultation and participation in the design of an energy strategy for the region and point out the need to train Inuit to gradually assume certain responsibilities within the energy production and utilization system.

Renewable energy potential lies chiefly in hydro, wind and seasonal solar, since there is very little natural gas or biomass in this region. Energy conservation measures and education could significantly reduce heating oil consumption.

The total annual demand is 32,506,683 kmh which requires 18,139,620 litres of diesel oil at a cost of $5,506,207. Heating oil is 13,982,914 litres, at a cost of $6,640,664. Total fuel demand for diesel generators and heating oil is 27,205,674 litres, for a total expenditure of $12,146,871. (Table 2).

Table 1

NOUVEAU QUEBEC ECOREGION

COMMUNITY	POPULATION	DIESEL	HYDRO	NATIVE	NON-NATIVE	MINING	LUMBER
INUKJUAK	650+	X		X			
KUUJJUARAAPIK	1 133	X		X			
POVUNGNITUK	752	X		X			
AKILIVIK	241+	X		X			
IVUJIVIK	184	X		X			
SALLUIT	518+	X		X			
KANGIQSUJUAQ	279+	X		X			
QUAQTAQ	163	X		X			
KANGIKSUK	279+	X		X			
AUPALUK	102+	X		X			
TASIUJAQ	106+	X		X			
KUUJJUAK	1 068	X		X			
KANGIQSUALUJJUAQ	333	X		X			
KILLINIK	NEW 1984			X			
UUMARUK	NEW 1984			X			
ASBESTOS HILL	200	X			X	X	
16	6 008	14		15	1	1	

+ Non-Innuit population not included

Table 2

NOUVEAU QUEBEC (10/81 - 10/82)

COMMUNITY	ANNUAL DEMAND (KWH)	DIESEL FUEL LITRES	$/L	DIESEL FUEL COST	HEATING FUEL LITRES	$/L	HEATING FUEL COST	TOTAL FUEL/L	TOTAL FUEL COSTS
KUUJJUARUAAPIK	2 443 796	1 562 460	.53	$ 843 728	2 977 105	.52	$1 548 094	4 539 365	$2 391 822
INUKJUAK	1 978 395	767 000	.48	$ 767 000	1 274 000	.52	$ 662 480	2 041 000	$1 429 480
POVUNGNITUK	1 683 580	677 000	.48	$ 324 960	1 335 000	.52	$ 694 200	2 012 000	$1 019 160
AKULIVIK	395 185	216 000	.54	$ 116 640	391 732	.52	$ 203 700	607 732	$ 320 340
IVUJIVIK	392 366	211 000	.48	$ 101 280	324 000	.52	$ 168 480	535 000	269 760
SALLUIT	653 456	405 000	.48	$ 194 400	802 000	.52	$ 417 040	1 207 000	$ 611 440
KANGIQSUJIAK	603 950	336 000	.48	$ 161 280	536 000	.52	$ 278 720	872 000	$ 440 000
QUAQTAQ	620 246	264 000	.48	$ 126 720	319 000	.52	$ 165 880	583 000	$ 292 600
KANGIKSUK	637 038	336 000	.48	$ 161 280	403 000	.52	$ 209 560	739 000	$ 370 840
AUPALUK	220 123	143 400	.54	$ 77 220	153 077	.52	$ 79 600	296 477	$ 156 820
TASIUJAK	325 432	143 100	.54	$ 77 274	190 000	.52	$ 98 800	333 100	$ 176 074
KUUJJUAK	4 389 361	1 884 000	.48	$ 904 320	2 495 000	.52	$1 297 400	4 379 000	$2 201 720
KANGIQSUALUJJUAQ	915 755	351 000	.48	$ 168 480	448 000	.52	$ 232 960	799 000	$ 401 440
KILLINIK	(1984)								
UUMARUK	(1984)								
ASBESTOS HILL (1981)	17 248 000	5 926 500	.25	$1 481 625	2 335 000	.25	$ 583 750	8 262 000	$2 065 375
ECOREGION TOTAL	32 506 683	18 139 620		$5 506 207	13 982 914		$6 640 664	27 205 674	$12 146 871

ANNEX I

ORDER(S) IN COUNCIL

Concerning the approval of Hydro-Quebec by-Law No. 280 establishing electricity rates and certain conditions applicable north of the 53rd parallel and amending its By-law No. 225.

- - - - -

Whereas Hydro-Quebec By-law 225, approved by Order in Council 3382-78 dated 2 November 1978, amended by its By-law 246 approved by Order in Council 975-80 dated 2 April 1980, establishes the electricity rates and the conditions of their application and determines the territorial jurisdiction of the said rates and conditions:

Whereas the territory thus determined excludes that part of the territory of Quebec situated north of the 53rd parallel:

Whereas the Governement du Quebec surrendered to Hydro-Quebec the existing equipment for the production and distribution of electricity in the villages north of the 53rd parallel;

Whereas the Gouvernement du Quebec wishes Hydro-Quebec customers north of the 53rd parallel to use electricity at the prices and conditions prevailing throughout the territory of Hydro-Quebec, for needs which cannot be conveniently satisfied otherwise than by electricity.

Whereas it is advisable to limit the use of electricity to current uses which cannot be economically served by other sources of energy;

Whereas Hydro-Quebec has made its By-law No. 280 establishing the rates and certain conditions applicable north of the 53rd parallel for customers served by autonomous networks.

It is ordered, therefore, upon the recommendation of the Minister of Energy and Resources:

That Hydro-Quebec By-law No. 280 amending its By-law 225 establishing electricity rates and the conditions of their application, already amended by its By-law No. 246, by approved.

Louis Bernard
Clerk of The Conseil executif.

By-Law No. 280 amending Hydro-Quebec By-law No. 225 establishing electricity rates and the conditions of their applications, already amended by By-law No. 246.

1. Article 12.21 of Hydro-Quebec By-law No. 225 is replaced by the following:

   "12.21 The rates and conditions established in this By-law apply in the whole territory of Quebec, subject however to the provisions of part 13 of this By-law concerning the Nouveau-Quebec".

2. Hydro-Quebec By-law No. 225 is amended by adding the following part 13:

   Part 13. Nouveau-Quebec.

   APPLICATION

   13.1 This part applies in the part of the territory of Quebec situated north of the 53rd parallel to customers to whom the electricity delivered is generated by one or more motor generator sets.

   The delivery of electricity for a load of more than 100 kilowatts in the territory described above is not subject to the rates and conditions of this By-law.

   RATES

   13.2 Domestic use: the delivery of electricity for domestic use is subject to the following domestic rate, called D-3:

   20.0¢ fixed charge per day, or 6$ fixed charge per monthly period, plus

   2.4¢ per kilowatthour for the first 20 kilowatthours per day, or for the first 600 kilowatthours per monthly period:

   15.0¢ per kilowatthour for the remaining consumption.

   Minimum bill: 20.0¢ per day, or 6 $ per monthly period.

   and to the conditions stipulated in this By-law for domestic use.

   13.3 Public lighting: the delivery of electricity for purposes of public lighting, or the supply of public lighting service, is subject to the rates and conditions established for those purposes in this By-law.

13.4 Other types of use: the delivery of electricity for any type of use other than the abovementioned types, is subject to rate G established in this By-law and to the conditions of its application.

However for contracts subject to this article, the use of electricity for the following purposes is forbidden: heating of water, heating of premises, outdoor heating or any other type o electric-heating except cooking appliances, kettles, toasters or other small household appliances.

If the customer infringes this prohibition, Hydro-Quebec ona written notice given at least eight days in advance, shall discontinue the supply of electricity to the customer.

Hydro-Quebec shall re-established service as soon as the cause of discontinuation has been eliminated. The customer shall then pay an amount based on the actual cost of disconnecting and re-establishing service.

DETERMINATION OF CONSUMPTION

13.5 The energy consumption, and when applicable, the power demand are metered by duly approved apparatus. However, when there is no metering equipment, the electricity consumption is determined by using one or several of the following methods:

a) data obtained by metering tests; or

b) an inventory of the connected equipments and their estimated average monthly use; or

c) the average consumption per contract for which the consumption is not metered, for each type of use and for each independant system separately; or

d) any other mean allowing the determination or evaluation of the consumption.

3. This By-law comes into force on the date of its approval by the Government and applies to the electricity consumption established by any meter-reading taken from that date and, in cases where the electricity consumption is not measured or is estimated, to the electricity and other services billed from that date.

CENTRAL QUEBEC

Indian and Northern Affairs Canada is responsible for supplying services, including electricity, to all native villages in Central Quebec.

This is the most heterogeneous ecoregion since it covers a huge area south of the 55th parallel, stretching from the James Bay coast to the Labrador border. There are 13 communities, grouped according to their culture and their economic activities. (Table 3) The Cree Regional Authority was created under the James Bay Agreement to represent the joint interests of eight Cree communities, three of which qualify as RCDP remote communities.

To the southeast of James Bay there are three Algonquin communities administered by the Attikamek-Montagnais Council. They are hunting and trapping villages in forested areas that are generally inaccessible because of the large number of lakes. Two mining towns and two lumber towns in this area also qualify as RCDP remote communities.

In the easternmost part of this ecoregion are the mining towns of Schefferville and Gagnon and the new Naskapi village of KawawaCHIKAMACH' near Schefferville. Both mining towns are supplied with electricity by small hydro belonging to the mining companies. Schefferville and the Naskapi village are in an unusual situation at the moment in that their electricity is generated by Iron Ore Company's Menihek hydro-electric dam in Newfoundland-Labrador. Gagnon's electricity is supplied by the Hart Jaune Mining Company, a subsidiary of US Steel. All three communities use mainly oil for heating.

The Central Quebec ecoregion has a traditional economy, namely, hunting, trapping and crafts in the native villages, lumbering in Parent and Clova, and mining in the other communities. With the exception of Selbaie Mines (zinc) near James Bay, the prospects are bleak for mining, and the possibility of company closures is also a threat to the electrical supply of the mining towns.

It is a strange anomaly that a number of communities in the James Bay complex should receive diesel-generated electricity, but Hydro Quebec has repeatedly reported grid connection costs to be prohibitive.

Renewable energy potential lies in biomass, mini-hydro, seasonal solar and wind for Hudson Bay coastal communities. Energy conservation measures and education have a significant role to play in reducing heating oil consumption.

The total annual demand is 52,256,271 kwh, which requires 18,727,382 litres of diesel oil at a cost of $5,536,834. Heating oil consumption is 13,719,607 litres, at a cost of $4,275,553. Total fuel demand for diesel generators and heating oil is 32,446,553 litres, for a total expenditure of $9,812,387. (Table 4).

TABLE 3

CENTRAL QUEBEC ECOREGION

COMMUNITY	POPULATION	DIESEL	HYDRO	NATIVE	NON-NATIVE	MINING	LUMBER
KAWAWACHIKAMACH	397		X	X			
SCHEFFERVILLE	1 928	X		X	X		
GAGNON	3 500		X		X	X	
BELLETERRE	470		X		X	X	
WEMINDJI	674	X		X			
EASTMAIN	329	X		X			
FORT RUPERT	946	X		X			
OBEDJIWAN	1 103	X		X			
WEYMONTACHIE	613	X		X			
LAC RAPIDE	337	X		X			
SELBAIE	1 000	X			X		
CLOVA	200	X			X		X
PARENT	800	X			X		X
13	12 297	9	4	7	6	3	2

TABLE 4

CENTRAL QUEBEC (10/81 - 10/82)

COMMUNITY	ANNUAL DEMAND	DIESEL FUEL LITRES	$/L	DIESEL FUEL COST	HEATING FUEL LITRES	$/L	HEATING FUEL COST	TOTAL FUEL/L	TOTAL FUEL COSTS
KAWAWACHIKAMACH				Hydro	Naskapi moving in December 1982				
SCHEFFERVILLE				Hydro	4 240 000	.29	$1 229 600	4 240 000	$1 229 600
GAGNON				Hydro	3 787 900	.23	$ 871 217	3 787 900	$ 871 217
BELLETERRE				Hydro	315 000	.33	$ 103 950	315 000	$ 103 950
WEMINDJI +	2 500 000	720 000	.29	$ 208 800	688 500	.83	$ 571 455	1 408 500	$ 780 255
EASTMAIN	1 500 000	510 000	.29	$ 147 900	180 000	.61	$ 109 800	690 000	$ 257 700
FORT RUPERT +	4 000 000	900 000	.29	$ 261 000	832 500	.35	$ 291 375	1 732 500	$ 552 375
OBEDJIWAN +	2 000 000	420 000	.31	$ 130 200	300 000	.31	$ 93 000	720 000	$ 223 200
WEYMONTACHIE +	1 500 000	380 000	.38	$ 144 400	225 000	.38	$ 85 500	605 000	$ 229 900
LAC RAPIDE +	800 000	400 000	.32	$ 128 000	150 000	.32	$ 48 000	550 000	$ 176 000
SELBAIE	36 353 111	10 509 633	.29	$3 047 793	2 250 892	.29	$ 652 758	12 760 525	$3 700 551
CLOVA	277 896	241 737	.31	$ 74 938	145 197	.30	$ 43 559	386 934	$ 118 497
PARENT	3 325 264	4 646 012	.30	$1 393 803	604 618	.29	$ 175 339	5 250 630	$1 569 142
ECOREGION TOTAL	52 256 271	18 727 382		$5 536 834	13 719 607		$4 275 553	32 446 553	$9 812 387

1982
Heating fuel volume and price: Quebec Department of Energy and Resources, 1981-82.
Diesel fuel price and demand: Indian and Northern Affairs, Quebec Region, 1981-82 statistics.
Heating statistics and prices from the James Bay Native Development Corporation, Daigneault Report, 1981.

LOWER NORTH SHORE AND ANTICOSTI

The Lower North Shore is a 400 km stretch of rocky coastline with sparse vegetation, numerous inland lakes and nearly a dozen rivers draining the Labrador watershed to the north. Some river valleys have timber stands large enough to supply small sawmills and local needs.

The abundance of rivers and the rugged nature of the coastline make it extremely expensive to build roads in this area. The coastal communities are therefore linked by sea and air, and goods and services are consequently very expensive.

The climate is cold and windy, and fog is prevalent in spring, summer and fall. Heating needs are 70% greater than in Montreal and the growing season is 30% shorter.

There are 15 communities along this coast, with a total population of about 6,000. These communities are administered by one regional government, the Municipality of the Lower North Shore, which is directed by an administrator appointed by the provincial government. The head quarters of this regional government is in Chevery (formerly Cross River), midway along the 400 km stretch of coastline. Eighty per cent of the population of this area is English-speaking. La Romaine is a Montagnais reserve and 25% of the inhabitants of St Augustin are also Montagnais. (Table 5).

The government has long neglected the Lower North Shore, and, although in the last few years there have been some sincere attempts at introducing changes, the government appears once again to be giving it low priority in the face of the overall pressing needs of the province.

Electricity is supplied by Hydro Quebec, which has installed diesel generators in five locations along the coast to serve the 15 communities. Mini-grids link certain clusters of individual municipalities that are still miles away from one another. Diesel fuel is delivered by ship or barge and heating fuel is also delivered by sea, under contract with Gulf Oil. Many residents have installed electric heating, since the price of electricity is standard throughout the province and thus much cheaper than oil heating.

This has increased the demand on the diesel generators and the situation can be resolved only by the addition of more generators, a rate structure change, legislation forbidding electric heating (as in Nouveau Quebec north of the 55th parallel) or some other solution.

Hydro Quebec has considered the construction of a small hydroelectric dam (20 mw) at Robertson Lake, near La Tabatiere, at an estimated cost of $180 million. This installation would supply electricity to all communities except La Romaine, which is too isolated for connection, and would feed back power into the main grid and supply all of Quebec east of Sept Iles. This is the only way the project could be affordable. With the present surplus of electricity in the Hydro Quebec grid, and the financial constraints faced by its new administration, it is doubtful that the Lake Robertson project will get under way in this decade.

Energy conservation has been largely ignored due to the high cost of imported materials and the slower pace of change in this region. Hydro Quebec has recently completed a pilot energy audit project in a few selected communities. There is a growing demand for a retrofit program for existing homes.

The region depends largely on welfare and fishing and the population is strongly in favour of developing local fish processing plants as an alternative to the present transportation of catches to Newfoundland.

Renewable energy potential lies in mini-hydro and wind. Energy conservation and education could play an important part in reducing heating oil consumption.

Anticosti island lies 35 miles off the Lower North Shore at the mouth of the St Lawrence River. It has only one town, Port Meunier, totally owned by the Quebec Department of Recreation, Fish and Game. This department is now divesting itself of this responsibility by transferring the mandate for electrical production to Hydro Quebec and selling the houses in Port Meunier to present occupants and others. A new island municipal government will take over as of April 1983. The residents are very curious about Hydro Quebec's plans to build a peat biomass plant in Port Meunier. There is also mini-hydro and wood biomass potential for Port Meunier.

The total annual demand for the Lower North Shore and Anticosti ecoregion is 30,812,468 kwh, which requires 11,136,214 litres of diesel oil at a cost of $3,786,312. Heating oil consumption is 5,934,713 litres, at a cost of 1,889,108. Total fuel demand for diesel generators and heating oil is 17,070,927 litres, for a total expenditure of $5,685,420. (Table 6).

TABLE 5

LOWER NORTH SHORE AND ANTICOSTI ECOREGION

COMMUNITY	POPULATION	DIESEL	HYDRO	NATIVE	NON-NATIVE	MINING	LUMBER
ANTICOSTI	224	X			X		
TELE A LA BALEINE	446	X			X		
LA ROMAINE	511	X		X			
ST PAUL'S RIVER	495	X			X		
LA TABATIERE	526	X			X		
HARRINGTON HARBOUR	311	X			X		
BRADORE BAY	123	X			X		
AYLMER SOUND	110	X			X		
MIDDLE BAY	143	X			X		
LOURDES DE BLANC SABLON	625	X			X		
BLANC SABLON	361	X			X		
ST.AUGUSTIN	1 059	X		X (109)	X		
MUTTON BAY	260	X			X		
OLFORT BAY	312	X			X		
CHEVERY	228	X			X		
	15	5 734	15		2	14	

TABLE 6

LOWER NORTH SHORE AND ANTICOSTI ECOREGION (10/81 - 10/82)

COMMUNITY	ANNUAL DEMAND	DIESEL FUEL LITRES	$/L	DIESEL FUEL COST	HEATING FUEL LITRES	$/L	HEATING FUEL COST	TOTAL FUEL/L	TOTAL FUEL COSTS
ANTICOSTI		1 100 000	.34	$ 374 000	1 576 000	.32	$5 504 320	2 676 000	$ 878 320
TETE A LA BALEINE	2 362 243	+			123 800	.32	$ 49 045	123 800	$ 49 045
LA ROMAINE	3 077 344	1 070 583	.34	$ 363 998	437 267	.32	$ 139 925	1 507 850	$ 503 923
ST.PAUL'S RIVER	2 328 715	+			++				
LA TABATIERE	3 004 917	3 254 027	.34	$1 106 369	336 000	.32	$ 107 520	3 590 027	$1 213 889
HARRINGTON HARBOR	1 654 597	+			507 000	.32	$ 162 240	507 000	$ 162 240
BRADORE BAY	841 600	+			++				
AYLMER SOUND	343 226	+			++				
MIDDLE BAY	507 259	+			++				
LOURDES DE BLANC SABLON	5 848 003	4 230 053	.34	$1 438 218	508 636	.32	$ 162 763		$1 600 981
BLANC SABLON	2 116 924	+			2 119 180	.32	$ 678 137	2,119 180	$ 678 137
ST.AUGUSTIN	4 679 667	1 481 551	.34	$ 503 727	326 830	.32	$ 104 585	1 808 380	$ 608 312
MUTTON BAY	1 204 535	+			++				
OLFORT BAY	1 169 164	+			++				
CHEVERY	1 674 274	+			++				
ECOREGION TOTAL	30 812 468	11 136 214		$3 786 312	5 934 713		$1 899 108	17 070 927	$5 685 420

*Heating fuel consumption and price: Quebec Department of Energy and Resources for 10/81 - 10/82.

+Connected to diesel generators in an other community

++ Fuel delivered from larger communities and amounts included in the heating fuel volume of these feeder communities i.e. Blanc Sablon, Harrington Harbor, La Tabatière.

MAGDALEN ISLANDS

The Magdalen Islands lie in the middle of the Gulf of St Lawrence 140 km east of the Gaspe Peninsula and 90 km north of Prince Edward Island. There are three interconnected islands, and one totally separated from the rest. They have low elevation, sandy soil, and are subject to steady winds. Over 14,000 people inhabit the islands and the regional government groups eight distinct communities into the Municipality of the Magdalen Islands, with offices in La Verniere, just outside the largest town of Cap-aux-Meules. (Table 7) Each community has its mayor and representatives in the regional government. The local economy is primarily tourism, fishing, local services, and welfare. A salt mine has recently begun to exploit considerable salt formations in the islands. (Table 9).

Hydro Quebec is responsible for electrical supply to the islands. This service is administered from the Matapedia regional headquarters in Rimouski. There are 2 diesel installations: a super-complex in Cap-auxMeules (possibly the largest in North America) and a smaller plant in isolated Ile d'Entree. The Cap-aux-Meules diesel system supplies a grid of seven communities and towns. Generation and transmission costs are so high that Hydro Quebec has promulgated a special, wide-ranging energy conservation and substitution program. (See annex 3 and 4 for the mandate and expenditures).

One of the chief problems for Hydro Quebec has been the shift to electric heating by Islanders during the oil-scarce years of the mid-70's. This resulted in heavy demands on their diesel plant.

Since electric heating supplied by diesels has only a 30% efficiency rate for the diesel fuel consumed, Hydro Quebec has begun a campaign to convert electric heating to fuel-oil heating, which has a 60-75% efficiency ratio for the fuel consumed. According to Hydro Quebec it costs less in total fuel oil to heat houses directly with oil that to heat them indirectly through oil-based diesel electric heating. This has led to a certain skepticism on the part of the Islanders, who find themselves between two well defined arguments: off-oil at a national level, and on-oil in their special case.

Renewable energy options are wind and cable connection via Prince Edward Island; IREQ and the NRC have built a Darrius windmill for test purposes on South Dune outside Havre-aux-Maisons. A bank of similar windmills is scheduled for construction in 1983-85, but their combined output will not exceed 20% of overall Island demand. The cost of cable connection to the Gaspe Peninsula is prohibitive, and the possibility of connection to PEI has yet to be studied.

The total annual demand is 100,281,520 kwh, which requires 29,300,140 litres of diesel oil at a cost of $7,461,753.

Total heating oil consumed is 13,778,504 litres, at a cost of $4,133,551. Total diesel and heating oil demand is 43,078,644 litres, for a total cost of $11,595,304. (Table 8).

TABLE 7

MAGDALEN ISLANDS ECOREGION

COMMUNITY	POPULATION	DIESEL	HYDRO	NATIVE	NON-NATIVE	MINING	LUMBER
CAP AUX MEULES	1 350	X			X		
ETANG DU NORD	2 702	X			X		
FATIMA	3 109	X			X		
GRANDE ENTREE	979	X			X		
GROSSE ILE	523	X			X		
HAVRE AUX MAISON	2 500	X			X		
HAVRE AUBERT	2 974	X			X		
ILES D'ENTREE	154	X			X		
8	14 291	8			8		

TABLE 8

MAGDALEN ISLANDS ECOREGION (10/81 - 10/82)

COMMUNITY	ANNUAL DEMAND	DIESEL FUEL LITRES	$/L	DIESEL FUEL COST	HEATING FUEL LITRES	$/L	HEATING FUEL COST	TOTAL FUEL/L	TOTAL FUEL COSTS
CAP AUX MEULES +	9 650 000								
ETANG DU NORD +	16 717 850								
FATIMA +	14 491 610								
GRANDE ENTREE +	4 566 210								
GROSSE ILE +	1 850 010								
HAVRE AUX MAISONS +	10 914 320								
HAVRE AUBERT +	12 439 230								
ILE D'ENTREE	775 560								
COMMERCIAL (KWH)									
CONSUMPTION	25 415 000								
INDUSTRIAL	3 794 000								
PUBLIC LIGHTING	222 000								
ECOREGION TOTAL	100 281 520	++ 29 300 140	.31 .23	++ $7 461 753	13 778 504	.30	$4 133 551	43 078 644	$11 595 304

+ includes only residential KWH consumption

++ #5 oil	20 266 130	1 X .23	=	$4 661 210
#2 oil	9 034 010	1 X .31	=	$2 800 548
Total	29 300 140			$7 461 753

Heating fuel consumption and prices: Quebec Department of Energy and Resources.

TABLE 9

MAGDALEN ISLANDS

ANNUAL POWER CONSUMPTION

Residential

Municipality	1979	1980	1981
Cap-aux-Meules	9 168 870	9 690 290	9 650 890
Etang-du-Nord	15 367 440	16 275 660	16 717 850
Fatima	14 491 610	15 412 430	16 182 820
Grande-Entree	4 566 210	4 789 810	3 967 510
Grosse-Ile	1 850 010	1 932 910	1 624 180
Havre-aux-Maisons	10 914 320	11 461 78	11 119 850
Havre-Aubert	12 439 230	13 369 630	11 238 140
Ile-d'Entree	775 560	830 570	349 280
TOTAL	69 573 250	73 763 080	70 850 520

Commercial (not available by municipality)

	1979	1980	1981
Ile-d'Entree	?	?	170 280
Rest of Magdalen Islands	?	?	25 244 720
TOTAL	21 870 000	23 637 000	25 415 000

Industrial (not available by municipality)

	1979	1980	1981
TOTAL	2 372 000	2 550 000	3 794 000

Public lighting (not available by municipality)

	1979	1980	1981
TOTAL	221 000	210 000	222 000
GRAND TOTAL	93 609 500	100 160 080	100 281 520

ANNEX 3

HYDRO QUEBEC

EXTRACT from the minutes of the meeting of the Board of Directors of Hydro Quebec held in Montreal on Tuesday, June 12, 1979.

MAGDALEN ISLANDS - ENERGY EFFICIENCY PROGRAM

On a motion duly made and seconded, it is unanimously

RESOLVED:

That the Board approve, under the terms and conditions set out below, the Energy Efficiency Program for the Magdalen Islands, developed in accordance with the request made by the Minister responsible for Energy following the decision of the Council of Ministers on January 24, 1979 to modify the program originally proposed by Hydro Quebec:

"PROGRAMME D'ACCROISSEMENT DE L'EFFICACITE
ENERGETIQUE AUX ILES-DE-LA-MADELEINE"

(ENERGY EFFICIENCY PROGRAM FOR
THE MAGDALEN ISLANDS)

TERMS AND CONDITIONS

SCOPE OF THE PROGRAM

The program applies mainly to private homes and to buildings used primarily for private residential purposes.

NATURE OF THE PROGRAM

a) Existing homes

1- Insulation: All private homeowners would be given the opportunity, at no cost to them, of improving the insulation of their homes, including the addition of storm doors and storm windows.

2- Improvement of oil-heating systems: Owners of oil-heated homes would also have the opportunity, at no cost to them, of improving their heating systems in order to bring them up to current technical and performance standards.

3- Converting electrical systems to oil: In addition, owners of private homes heated with electricity would have the opportunity of selling Hydro Quebec their electric heating systems and, at no cost to them, of installing oil-heating systems that incorporate the latest technology.

4- Electric water heaters: Users of electric water heaters would have the opportunity of selling these heaters to Hydro-Quebec and, at no cost to the, of installing oil water heaters.

b) Planned or unfinished homes

Owners of new homes or homes under construction would be eligible to receive a lump sum payment if they chose oil as the energy source for home and water heating.

c) Business and industry

Energy conservation consultants would study facilities and give businesses and industries, at no cost to them, energy consumption reports identifying inefficiencies and proposing money-saving improvements.

IMPLEMENTATION OF THE PROGRAM

- The program will be spread out over two or three years. Hydro Quebec will give priority to Ile-d'Entrée and the outlying regions of the Magdalen Islands in order to avoid investments that would have to be made immediately if the program were not implemented promptly in these areas.
- The first phase will begin with a survey of homes in order to determine appropriate action in each case. This survey will be conducted by about twenty students from the Islands who will be trained by Hydro Quebec.
- After these data have been analysed, Hydro Quebec representatives will meet with individual home owners to determine which parts of the program apply in each case.
- Once this phase has been completed, the work of insulating homes, improving or replacing heating systems and replacing electric water heaters will be given to local contractors trained for this purpose by Hydro Quebec.

COMMUNICATION

- Before the list of homes in drawn up, Hydro Quebec, in co-operation with a representative of the Minister responsible for Energy, will develop a communication program aimed at the population of the Magdalen Islands and the rest of the province. The initial stage of the program will focus on informing and consulting the Magdalen Islands County Council in order to obtain comments on the program and its implementation and on the development of the communication program itself.

- The Government of Quebec should open an office on the spot in order to allow local residents to channel any complaints and claims to a neutral party. If for any reason such an office cannot be established, Hydro Quebec should reach an agreement with the County Council, even if it means giving the Council financial assistance, to have the latter assume this role, which the company considers essential.

That the Chairman of the Board be asked to confirm Hydro Quebec's approval of the said program to the Minister responsible for Energy by informing him that no further information regarding the decision will be released until the Minister and Cabinet decide otherwise; furthermore, it will be repeated to the Minister that the program will be carried out by the Matapedia region of Hydro Quebec, whose preliminary estimate set the cost at $15,000,000, which amount is in addition to the company budget and does not include the "insulation" part of the program, which is the responsibility of the Bureau des economies d'energie (BEE).

ENERGY EFFICIENCY PROGRAM FOR THE MAGDALEN ISLANDS

HYDRO QUEBEC

WEEK ENDING OCTOBER 29, 1982

INVESTMENT	QTY	WEEK AMOUNT	QTY	CUMULATIVE AMOUNT
Insulation	2	4,877.21	2651	4,783,303.
Lump sum payment (new home)	2	8,100.21	102	386,650.
Complete hot air heating	1	930.00	332	905,322.
Complete hot water heating	11	40,780.00	636	2,191,337.
Replacement of hot air furnace	2	3,194.00	174	259,587.
Replacement of hot water furnace	2	3,945.00	407	695,423.
Chimney construction and repair	11	7,170.15	700	450,871.
Oil-fired water heater	1	995.00	377	307,122.
Oil tank	5	872.00	413	69,997.
Installation of storm doors and storm windows	27	18,103.00	2358	1,126,891.
Purchase of fixed electric heating			584	880,520.
Purchase of electric water heater	5	2,750.00	905	497,435.
Purchase of portable electric heating			150	8,560.
Furnace inspection			267	5,202.
Water heater inspection			9	170.
Oil tank inspection			8	160.
Performance test			85	6,445.
Minor repairs			456	89,401.
Maintenance of heating system			1224	128,903.
Compensation on refusal by the owner (insulation)	1	50.00	121	6,050.
Compensation on refusal by the owner			196	24,500.
Purchase and installation of oil nozzles				112,270.
TOTAL		91,766.36		12,936,124.

ENERGY EFFICIENCY PROGRAM FOR THE MAGDALEN ISLANDS (EEPMI)

HYDRO QUEBEC

WEEK ENDING OCTOBER 29, 1982

RECOVERY	WEEK	CUMULATIVE
Water heaters		905.0
Fixed electric heating (kW)		4890.7
Moveable electric heating (units) (214)		336.7

STATISTICS	WEEK	CUMULATIVE
Mumber of surveys	1	3418
Number of agreements signed by homeowners	2	2995
Number of homes sent to Purchasing for calls for tender	21	2861
Number of homes retrofitted and approved	24	2171
Kilowatts saved (new homes)	38	1938
Kilowatts withdrawn (4 kW water heater)	20	3740
Kilowatts withdrawn (electric heating)		5226.7
Kilowatts conserved through furnace replacement	240	23235
Number of businesses visited		189
Number of employees working for the EEPMI		11
Number of claims sent to the BEE		2030
CHIP - applications completed: 1023; approved: 621;		
Cheques issued: nil.		
New homes built as of July 1982 (official)		447
Number of telephone calls during October 1982		514
Number of visitors during October 1982		328
Number of photocopies during October 1982		5980

5.0 ENERGY PLAYERS IN QUEBEC REMOTE COMMUNITIES

A questionnaire was sent to 32 organizations involved in energy production and utilization in Quebec remote communities. (Annex 5). The first question asked them to define their role and responsibility with regard to energy use in remote communities. The following list of energy players contacted, and their responses, summarize the various responsibilities, programs and priorities which affect the province's remote communities.

We received 26 written responses and 2 telephone responses. Four energy players did not reply, though two of these are monitoring the RCDP through participating provincial government departments. One telephone respondent indicated that once re-organization of his department (Industry, Trade and Commerce Canada) is completed he will be in a better position to discuss participation in the RCDP.

ANNEX 5

THE ENERGY PLAYERS IN QUEBEC REMOTE COMMUNITIES
Letter dated October 22, 1982 - French

M. Francois Gendron Ministre, responsable des communautes eloignees, AMENAGEMENT ET DEVELOPPEMENT REGIONAL (QUEBEC) Edifice 11, 2e etage, 875, Grande-Allee, Quebec (Quebec) G1R 4Y9	No response Has communicated with Ministere Energie et Ressources (Quebec) on RCDP.
M. René Simon Chef CONSEIL ATTIKAMEK - MONTAGNAIS 80, boulevard Bastien Village Huron (Quebec) G0A 4V0	No response
M. Francois Dugal Directeur de recherche CRIQ-CENTRE DE RECHERCHE INDUSTRIEL DU QUEBEC 333, rue Franquet C.P. 9038 Ste-Foy (Quebec) G1V 4V7	Written response
M. Yves Normandin Assistant general adjoint FEDERATION DES COOPERATIVES INUIT 8102, autoroute Trans-Canada Saint-Laurent (Quebec) H4S 1M5	Written response
M. Pierre Fiset Representation delegated Directeur Region Matapedia HYDRO QUEBEC Rimouski (Quebec)	Written response to Mr. Lucien Jean Director OFF-Grid Sector

M. Gilles Belliveau Directeur Region Montmorency HYDRO QUEBEC 5200, boul. Neuvialle Case postale 1607 (Quebec) G1K 7K1	Written response
M. Claude Richard Directeur de conservation de l'energie et production INSTITUT DE RECHERCHE D'HYDRO QUEBEC 1800, Montee Ste-Julie Varennes (Quebec) J0L 2P0	Written response
M. Guy Tremblay Chef, service nord du 55e parallele MINISTERE DE L'EMPLOI (CANADA) 2085, rue Union, piece 305 Montreal (Quebec) H3A 2C5	Written response
M. Gilbert Delage Directeur, energies renouvelables et economies d'energies MINISTERE DE L'ENERGIE ET RESSOURCES (QUEBEC) 200B, chemin Ste-Foy Quebec (Quebec) G1R 4X7	Written response
M. Dave Campbell MINISTERE DE L'ENVIRONNEMENT, CANADA Hull (Quebec) K1A 1C8	Written response
Dr. Jacques Giguere Directeur general Recherche et developppement de la planification MINISTERE DE L'ENVIRONNEMENT (QUEBEC) 2360, Chemin Ste-Foy, 2e etage Sainte-Foy (Quebec) G1V 4H2	Written response
M. Pierre Boyer Officer regional MINISTERE DE L'INDUSTRIE ET COMMERCE (CANADA) 685, rue Cathcart, piece 512 C.P. 1270, Station B Montreal (Quebec) H3B 3K9	Telephone response No direct role foreseen at present. Can be contacted on project-specific level anytime.

M. Georges Tadros Ingenieur Senior de la section mecanique et electrique MINISTERE DES AFFAIRES INDIENNES ET DU NORD (CANADA) 1141, route de l'Eglise C.P. 8300 Quebec (Quebec) G1V 4C7	Written response
M. Jean-Guy Blouin Service affaires nordiques et amerindiennes MINISTERE DES AFFAIRES MUNICIPALES (QUEBEC) 860, place Youville, 6e etage Quebec (Quebec) G1R 3P6	Written response
M. Gatien Dandois Coordonnateur MINISTERE INDUSTRIE, COMMERCE ET TOURISME 710, place Youville, 3e etage Quebec (Quebec) G1R 4Y4	No response
M. Julien Bergeron Coordonnateur des activites en milieu amerindien et inuit MINISTERE DES LOISIRS, DE LA CHASSE ET DE LA PECHE (QUEBEC) 150, boul. St-Cyrille est, 16e etage Quebec (Quebec) G1R 4Y3	Written response Representation delegated to Mr. Armand Leblon Directeur Ministere des Loisirs de la Chasse et de la Peche Port Meunier, Anticosti.
M. Clement Tremblay Conseiller - cadre aupres du Sous-Ministre MINISTERE DES TRANSPORTS (QUEBEC) 700 est, boul. St. Cyrille Quebec (Quebec) G1R 5A9	Written response
M. Marcel Gregoire Directeur, region Nord MINISTERE DES TRAVAUX PUBLICS ET APPROVISIONNEMENTS (QUEBEC) 475, St-Amable, 5e etage Quebec (Quebec) G1R 4X9	Written response

M. Richmond Monger Administrateur MUNICIPALITE DE LA BASSE COTE NORD Chevery Comte Duplessis (Quebec) GOG 1G0	Written response
Mme Lise Chevrier Secretaire Tresorier MUNICIPALITE DES ILES DE LA MADELEINE C.P. 238 Laverniere, Iles de la Madeleine GOB 1L0	Written response Representation transferred to Jean Gagnon
M. Ovide Poitras Vice president, developpement NOUVELER 1080, Beaver Hall, suite 1810 Montreal (Quebec) H2Z 1S8	Written response
M. Jacques Meunier Directeur OFFICE DE PLANIFICATION ET DE DEVELOPPEMENT DU QUEBEC, OPDQ 625 blvd. La Fleche, Bureau 352 Haute-Rive (Quebec) G5C 1C5	Written response
M. Gaston Moisant Secretaire associe SAGMAI 875 est, Grande-Allee Quebec (Quebec) G1R 4Y8	No direct response SAGMAI will monitor RCDP through participating ministries
M. Jacques Baril Coordonnateur, logement rural et autochtones SOCIETE CANADIENNE D'HYPOTHEQUES ET DE LOGEMENTS 1010 ouest, rue de Lagauchetiere 9e etage Montreal (Quebec) H3B 2N2	Written response
M. Claude Laliberte President et Directeur generale SOCIETE D'ENERGIE DE LA BAIE JAMES 800, Boulevard Dorchester, est Montreal (Quebec) H2L 4M8	Written response

M. Bernard Mathieu Written response
President
SOCIETE DE DEVELOPPEMENT AUTHTONES
DE LA BAIE JAMES
SAGMAI - SODAB
875, Grande Allee est
Quebec (Quebec)
G1A 1A2

M. Roger Beaudoin Written response
Conseiller cadre aupres du president
SOCIETE D'HABITATION DU QUEBEC
1054, rue Conroy
Quebec (Quebec)
G1R 5E7

5.1 THE ENERGY PLAYERS IN QUEBEC REMOTE COMMUNITIES

Letter dated October 22, 1982 - English

Billy Diamond Grand Chief CREE Regional Authority 1500, Sullivan Val d'Or (Quebec) J0P 1M1	Indirect response Representation delegated to Mr. Brian Craik
Phillipp Awashish Senior Environmental Officer CREE Regional Authority 1500 Sullivan Val d'Or (Quebec) J0P 1M1	Written response Representation delegated to Mr. Brian Craik
Paul Wilkinson NASKAPI CORPORATION 1070 Bleury, suite 340 Montreal (Quebec) H2Z 1N3	Written response
Eugene Dimytric Schefferville Power Corporation Iron Ore Co. P.O. Box 1000 Labrador Bay, Nfld. A2V 2L8	Telephone response No role foreseen due to closing of Iron Ore Co.
Willy Makiuk President KATIVIK P.O. Box A Kuujjuak (Quebec)	Written response
Mary Simon President MAKIVIK 4898 Maisonneuve West Montreal (Quebec)	Written response

5.2 SCOPE AND RESPONSIBILITY OF EACH PLAYER

The following question was addressed to all of the following energy players:

What is the role and responsibility of your organization concerning energy conservation and renewable energy in Quebec remote communities?

5.2.1 Mr. Philipp Awashish (Represented by Brian Craik)
Senior Environmental Officer
CREE Regional Authority

The Cree Regional Authority through Cree Housing Corporation is responsible of planning and Implementation of Community Development projects as desired by Cree Communities of Quebec.

These projects include the planning and construction of housing and infrastructure.

It is imperative to include within these plans appropriate system for energy consumption.

The plans take also into account the type of energy that is or can be made available to the Cree Remote Communities.

5.2.2 M. Willy Makiuk,
KATIVIK REGIONAL GOVERNMENT

As a result of the Act Concerning Northern Villages and the Kativik Regional Government and various agreements with provincial governmental organizations, the Kativik Regional Government plays an important role with respect to energy conservation and renewable energy in the municipalities north of the 55th parallel. This mandate can be conveniently separated into three interrelated aspects which are:

1. The administration of housing and infrastructures in the communities.
2. The mandate with respect to manpower training programs and
3. The mandate to undertake public information and education programs.

The following will briefly describe these mandates as related to energy conservation and renewable energy in the North.

i. Administration of housing and infrastructures in the municipalities

a. Technical assistance and liaison with the municipalities Section 198 (see Annexe) of the Kativik Act provides the municipal councils of each municipality with the mandate to establish and administer any system of heating and power development for public or private use. In this respect, the Kativik Regional Government has the responsability of providing technical assistance to the communities for the administration and maintenance of all aspects of housing, including heating and power systems.

In addition to providing assistance to the municipalities, KRG acts as a liaison between the S.H.Q. and the villages and makes recommendations concerning the design, construction and renovation of houses and infrastructures in the territory.

b. Direct mandate

Related to the above is the mandate of KRG to prepare, by ordinance, minimum standards for the construction of houses and buildings in this territory (section 363) Kativik Regional Government is presently in the process of reviewing the present conditions of houses and buildings in the territory for the purpose of establishing such standards and energy conservation because of the high energy costs in the North, will be given primary consideration.

Each year, Kativik Regional Government is also directly responsible for certain "capital projects" in the territory. A typical example this year was the construction of a community center in Salluit. KRG has direct responsability for such projects, including the design, construction and maintenance of energy efficient systems.

ii. Manpower training programs

An important aspect which must be taken into account when programs of the nature of the RCDP are implemented in the North, is the training and utilization of local employment. In this respect Kativik Regional Government has played, and will continue to play an active role.

In fact, the primary responsabilities of KRG in this respect are to receive proposals from the municipal corporations for vocational training programs and to advise the responsible authorities of Quebec (section 378).

III. Public information and education programs

For the RCDP to be effective in the long run, the importance and awareness of energy conservation must be developed by the population in the North. Ideally, the population must be aware of the importance of conserving energy so that each household may individually and collectively take the appropriate steps in reducing energy consumption.

Kativik Regional Government has the mandate of undertaking public information and education programs (section 361). With the cooperation of the Kativik School Board and the development of an efficient and practical information network, KRG could effectively implement a program to inform the population of the various aspects of energy conservation.

Given the specific mandates described above, Kativik Regional Government has an important role in the North with respect to the conservation of energy in particular, and to a lesser degree, alternate energy methods.

5.2.3 Ms Mary Simon,
President, MAKIVIK

Makivik is an Inuit association created under Quebec law in 1978. Its membership is composed solely of Inuit beneficiairies under the James Bay and Northern Quebec Agreement signed in 1975. Makivik has the legal responsibility to implement and protect the various rights and benifits of Inuit under the Agreement. In addition, its objects provide that it "relieve poverty and promote the welfare and the advancement of the education of the Inuit"; "develop and improve the Inuit communities and improve their means of action" and "foster, promote, protect and assist in preserving the Inuit way of life, values and traditions" . Pursuant to these overall objectives, Makivik has a responsibility to ensure that the Inuit communities are in a position to take advantage of any government measures or programs which could ultimately serve to improve the quality of life of Inuit of these communities. It is clear, based on its objects, that Makivik has a role and responsability with respect to energy conservation and renewable energy in the Inuit communities of northern Quebec. Makivik has always been deeply interested in the development of renewable energy sources. Indeed, the issue of renewable energy for the northern Quebec Inuit communities was discussed at the Makivik Annual General Meeting in Inukjuak in March, 1982.

5.2.4 Mr. Paul Wilkinson,
CORPORATION NASKAPI

To plan and construct the new Naskapi village at Kawawachikamach.

5.2.5 Francois Dugal,
Eng.,Director,
Secteur Materiaux et procedes industriels
(Materials and industrial processes)
QUEBEC INDUSTRIAL RESEARCH CENTRE (CRIQ),
333 Franquet, P.O. Box 9038,
St Foy, Quebec,
G1V 4C7.
Tel: (418)659-1550 Telex: 051-31569

CRIQ has not yet sponsored any projects dealing specifically with energy conservation and renewable energy in remote communities. However, it is something that we are very interested in, and several projects directly or indirectly related to renewable energy or energy conservation are currently being conducted by CRIQ, with the participation of several of our R&D teams. Areas that we would be particularly interested in studying within the context of demonstration projects are:

- Use of forest biomass for:

  . heating - domestic
  - business and industrial
  . electric power production

Regions concerned: James Bay and Lower North Shore.

Advantages:
. reduction in oil imports
. local job creation
. reduction in the number of persons receiving Unemployment
. Insurance benefits and Welfare payments.

- Use of sub-zero winter temperatures to make ice; this ice could be stores until the summer and then used for:

  . air conditioning in buildings
  . refrigerating and freezing foods
  . storage of fish

Regions concerned: James Bay, Nouveau Quebec, Lower North Shore and the Magdalen Islands.

Advantages:
. reduction in oil and electricity imports
. simple technology
. low initial investment

The implementation of these techniques, which are now being developed by CRIQ, need in no way be restricted to remote areas, though it is quite likely that they could be used in such areas in the first instance. CRIQ would be pleased to co-operate in any demonstration projects.

5.2.6 Yves Normandin,
Deputy Director General,
La Federation des Cooperatives du Nouveau Quebec

1. We are responsible for distributing fuel oil in the following four villages: Kuujjuarapik, Akulivik, Aupaluk et Tasiujak.

2. We operate various businesses in the following eleven communities: Povungnituk, Kuujjuarapik, Ivujivik, Salluit, Inukjuak, Kuujjuaq, Kangigsualujjuaq, Kangirsuk, Kangigsujuaq, Akulivik and Quaqtaq.

Of course, we do everyting we can to encourage our local staff to conserve energy. Whenever new buildings are constructed, we make a point of installing a suitable heating system and of using the best insulation material available.

5.2.7 Pierre Fiset
Director, Matapedia Region
HYDRO QUEBEC

We are responsible for supplying electric power to the Magdalen Islands. This electricity is produced by diesel generators.

Hydro-Quebec is currently sponsoring a program to reduce the overall consumption of heating oil in the Magdalen Islands.

5.2.8 Lucien Jean, Manager
Unconnected Systems
HYDRO QUEBEC

The Unconnected Systems unit, Montmorency Region, headed by engineer Lucien Jean, is responsible for electricity production and distribution for 30 remote communities in Quebec. This electricity is produced by 20 diesel generating stations.

The regional Technical Projects unit, headed by engineer Marc Methe, is responsible for the planning and design of these stations.

The main problem with diesel-generated power is that production costs are high compared with revenue from electricity sales. Any study or project that might help to reduce these costs would be of interest to us, provided it is economically viable.

5.2.9 Claude Richard
Director, Energy Conservation and Production
INSTITUT DE RECHERCHE D'HYDRO QUEBEC (Hydro Quebec research institute)

Hydro Quebec is responsible for supplying remote communities with electric power at the lowest possible cost. It is therefore interested in the use of local renewable energy and in energy conservation as ways of reducing the real cost of energy.

The IREQ's mandate within Hydro Quebec's development plan is to research and develop technologies related to new energy forms and energy conservation.

5.2.10 Guy Tremblay
Head, Services North of the 55th Parallel
EMPLOYMENT AND IMMIGRATION CANADA

The CEIC's role concerning energy conservation and renewable energy in Quebec remote communities might be to co-operate with government and local authorities in educating energy consumers.

Indeed, our training programs may enable the Inuit to become experts in these fields. Certain job creation projects could also be promoted to supplement energy-related programs sponsored by Energy, Mines and Resources Canada.

5.2.11 Gilbert Delage
Director, Conservation and renewable energy
QUEBEC DEPARTMENT OF ENERGY AND RESOURCES

In the entire territory of Quebec, the functions and powers of the Quebec Department of Energy and Resources include:

- the management and granting of rights of ownership and rights of use of energy resources of the public domain;
- the devising and carrying out of plans and programs for the enhancement, development and transformation of energy resources;
- the setting up of laboratories for research in energy;
- the accelerated expansion of Hydro Quebec, particularly by securing for it the development of the hydraulic power available;
- the control of energy supplies;
- the establishment of energy conservation programs;

- the control of the quality of energy production and the supervision of the safety of its distribution;

- the application of legislation relating to energy resources.

5.2.12 Dave Campbell
Director General
Research Development and Planning
ENVIRONMENT CANADA

DRECT, the Development and Demonstration of Resources and Energy Conservation Technology Program is sponsored by Environment Canada and the Department of Energy, Mines and Ressources.

The aim of all projects under this program must be to reduce, recover or recycle wastes and conserve energy, particularly that which is obtained from non-renewable resources.

5.2.13 Dr. Jacques Giguere
Director General
Research Development and Planning
QUEBEC DEPARTMENT OF ENVIRONMENT

Although the Quebec Department of Environment is not directly responsible for energy conservation and renewable energy in Quebec remote communities - this is the concern of the Quebec Housing Corporation and the Department of Municipal Affairs (through grants) - we are interested in the quality of the environment in native communities.

Supply of drinking water (by truck), waste water treatment and the disposal of solid wastes are all related to energy conservation problems, since these activities require the use of trucks or muskegs.

The installation of running water and flush toilets in houses could help considerably to reduce heating oil and fuel consumption since there would be less dependence on truck transportation.

5.2.14 George Tadros
Senior Engineer, Electrical Mechanical Section
DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS (CANADA)

Our role concerning energy conservation and renewable energy is to develop general principles for the operation of power plants, that is, to ensure that energy consumers are provided with ongoing, efficient and uniform service which, as far as possible, meets their requirements and takes into account environmental concerns.

Our responsibility is to see that this mandate is carried out by ensuring that fuel and other supplies are delivered as required and in sufficient quantities.

A further role, which is no less important, is to implement energy conservation measures and participate in various government energy conservation programs. We are thus responsible for providing agencies running such programs with the information they need to undertake certain projects or studies related to energy conservation and for providing the appropriate follow-up information.

5.2.15 Jean-Guy Blouin
Northern and Amerindian Affairs
QUEBEC DEPARTMENT OF MUNICIPAL AFFAIRS

The Department of Municipal Affairs has not played any role in energy conservation and renewable energy in Quebec remote communities.

As far as I know, the only action that we have taken was indirect, and consisted of distributing information packages to all Quebec municipalities.

On the other hand, the Department subsidizes the construction of equipment in northern villages. It would be possible, by demanding certain minimum standards, to encourage energy conservation.

5.2.16 Clement Tremblay
Executive adviser to the Deputy Minister
QUEBEC DEPARTMENT OF TRANSPORT

Little is produced in Nouveau Quebec, James Bay and the Lower North Shore, so that everything has to be transported, at considerable cost. The Quebec Department of Transport is responsible for transportation infrastructures, and to a certain extent for ensuring that remote or isolated communities receive supplies.

Transportation and construction techniques and ideas and philosophies concerning transportation have a tremendous impact on energy use in remote areas.

5.2.17 Public Works Canada
JCG Gagnon
2001 University Street
18th Floor
Montreal, Que.
H3A 1K3

The Quebec Region of Public Works Canada has been interested in the conservation of non-renewable energy for several years now and has consequently placed a great deal of importance on the following points:

a) improved insulation of buildings in remote and northern areas of Quebec and in the NWT;

b) heating systems with high performance and efficient controls;

c) recuperation of heat loss through the use of heat pumps or other air circulation systems;

d) greater use of solar energy and wind power;

e) solar energy for domestic hot water heating.

JC Gilles Gagnon is project manager and co-ordinator for design and construction of PUSH projects in Quebec. He has more than 15 years of construction experience in remote communities in Quebec and the NWT, and his work for Public Works Canada involves the five areas listed above.

Several federal buildings in Quebec now use solar energy and the results have exceeded all expectations. Canadian solar technology is among the most highly rated in the world. Our organization is eager to co-operate with other federal, provincial or private agencies.

Mr. Gagnon is assisted by Rene Desormiers, a highly skilled technician who has contributed extensively to the improvement of non-renewable energy conservation systems.

5.2.18 Madame Lise Chevrier
Magdalen Islands municipality

The Magdalen Islands County Council is currently preparing a regional development plan. This action actually goes beyond the limits of zoning as such and includes the development and protection of our environment and resources. The development proposal submitted last July thus outlined our policies and projects concerning, among other things, energy needs.

The Magdalen Islands County Council is composed of mayors from each of the eight local municipalities. The regional group has been consulted by the governments and their agencies on certain issues: Hydro Quebec (Energy Efficiency Program for the Magdalen Islands), Department of Regional Economic Expansion (economic development program).

5.2.19 Jacques Meunier
Director
QUEBEC PLANNING AND DEVELOPMENT BUREAU (QPDB)

Although our agency is particularly interested in circumstances in remote communities, we do not claim to have any responsibility for energy conservation.

We may occasionally be involved in energy conservation in connection with the job creation program that we administer (experimental community employment creation program).

5.2.20 Jacques Baril
Co-ordinator, Rural and Native Housing
CANADA MORTGAGE AND HOUSING CORPORATION

The Corporation does not really have any role or responsibility concerning energy use apart from applying standards for insulation and materials used in new buildings.

Energy conservation measures are being incorporated in new buildings.

5.2.21 Claude Laliberte
President and Managing Director
JAMES BAY ENERGY CORPORATION

The James Bay Energy Corporation is a wholly-owned subsidiary of Hydro Quebec and has as its mandate the carrying out of engineering, construction and management works in connection with large-scale projects entrusted to it by Hydro Quebec. The JBEC thus has no direct role or responsibility concerning energy conservation and renewable energy in Quebec remote communities. It is concerned with energy conservation in so far as it is important to the optimal implementation of its projects.

5.2.22 **Bernard Mathieu**
President
JAMES BAY NATIVE DEVELOPMENT CORPORATION
SAGMAI - JBNDC

The Act to incorporate the James Bay Native Development Corporation (JBNDC) in 1978 gives an indication of the Corporation's role with regard to energy use. Among the objectives of the JBNDC are those defined in sections 7 and 8 of the Act:

SECTION 7

In particular, the Corporation must assess opportunities and projects or activities that will directly benefit the James Bay Crees in the fields of access to Cree agglomerations, outfitting, tourism, native arts and crafts, road maintenance, fuel distribution, forestry and mining and other activities of the same nature.

The Corporation may prepare projects of these kinds and proceed with them, and engage in such activities.

SECTION 8

The Corporation must cooperate with the James Bay Crees to assist them in developing the fields of fuel distribution, mining exploration and exploitation, forest exploitation, construction and transportation services.

Since the end of October 1982, the JBNDC has been pursuing these objectives by operating a petroleum products distribution network, through three Cree agents in Fort Rupert, Eastmain and Wemindji. The Corporation also acts as a wholesaler for the supply and storage of these products.

6.0 QUEBEC PRIORITIES AND STRATEGY FOR THE REMOTE COMMUNITIES

Even though it would be wrong to say that there is no overall strategy for Quebec remote communities, it is nevertheless difficult to say exactly what this strategy is. It is clear that there are many players, various priorities, a few common goals and a certain amount of co-ordination. Although at first glance the net picture is a blur, closer examination reveals a set of basic elements and a set of emerging priorities that could lead to an overall provincial policy for remote communities.

6.1 Basic elements

1. A variety of clients or end-user groups. Quebec has four distinct groups of remote communities, each with its own particular needs and sociocultural identity.

2. All players are interested in reducing the cost of present energy delivery systems.

3. There is some degree of co-ordination of energy planning and delivery within each ecoregion.

4. There is little co-ordination of energy planning and delivery among the four ecoregions as a whole.

5. Hydro Quebec plays a predominant role in three of the four ecoregions: Nouveau Quebec, the Lower North Shore and Anticosti and the Magdalen Islands.

6. Indian and Northern Affairs Canada plays an important role in Central Quebec.

7. Hydro Quebec's priorities for remote communities have been rationalization of diesel service, grid extensions, rate structure changes for electric heating, and varying degrees of energy conservation depending on the ecoregion.

8. Emphasis on project planning rather than program planning. All of the major energy players, such as Hydro Quebec, Nouveler, IREQ and CRIQ, appear to have promoted renewable energy technology, even though their individual mandates cover various other technologies. Hydro Quebec prefers hydro projects; Nouveler is interested mainly in biomass; and IREQ has its priorities on wind projects. Each organization has thus planned projects according to its own particular priorities. Enthusiasm for individual high-profile project planning has meant that program planning in function of the overall needs of the province has been neglected.

6.2 Emerging priorities

6.2.1 Criteria for project evaluation: Provincial questionnaire results

A questionnaire (table 10) was sent to 32 energy players (Annex 5) with a list of possible criteria which could be used to evaluate forthcoming project proposals for RCDP funding.

The combined results of the 28 completed questionnaires indicated a positive response to these criteria. Such consensus points to an emerging set of provincial priorities.

(See questionnaire results on next pages)

6.2.2 Ecoregion priorities

Nouveau Quebec

1. Upgrading of equipment and service by Hydro Quebec
2. Energy conservation initiatives
3. Implementation of the Quebec Housing Corporation's energy efficient standards for new buildings
4. Research and analysis of hydro potential
5. Wind power feasibility studies

Lower North Shore/Anticosti

1. Energy conservation
2. Mini-hydro development
3. Increase electrical service to meet the demands of expanding fish processing industries
4. Wind power feasibility
5. Biomass feasibility for Anticosti

Central Quebec

1. Study the possibility of taking over responsibility from Indian and Northern Affairs Canada
2. Grid extension where economically viable option
3. Maintenance of hydro power generation where already present i.e. in the mining communities

Magdalen Islands

1. Energy conservation;
2. Conversion to oil heating;
3. Wind turbine park;
4. District heating for Cap-aux-Meules;
5. Rate structure modifications.

6.2.3 Emerging provincial priorities

1. Emphasis on energy conservation as an essential step to renewable energy development in remote communities. The Energain energy audit program is being considered for Nouveau Quebec and the Lower North Shore and Anticosti ecoregions.

2. Overall program planning to coordinate multiple project planning efforts. This includes initiatives to orchestrate the objectives and agendas of various departments and provincial Crown corporations. It also includes efforts to respond to socio-cultural and socio-political needs in the overall planning process, particularly with regard to consultation, accountability, co-responsibility.

3. Clarification and enhancement of agreements among energy players concerning energy efficiency objectives and means of attaining them.

4. Coordinated funding of projects by the provincial departments and Crown corporations involved in remote community energy utilization.

5. Creation of an innovative task force to promote consensus and coordinate the design of a comprehensive energy development and utilization strategy for Quebec remote communities.

2. The following criteria could serve to evaluate projects proposals concerning energy conservation and renewable energy in Quebec remote communities. Please evaluate these criteria, and add any if so desired.

ANNEX 6

Criteria	Very important	important	desirable	marginal	Not desirable
- Achieve greater self-reliance in energy supply	10	4	4	1	
- Achieve lower long-term energy costs	18	4	5	1	
- Increased levels of electrical service for domestic, community and industrial needs	6	4	5	1	1
- Offer opportunities for local employment	8	4	7		
- Provide opportunities for training of local population in skills relating to construction and operation of new energy systems	5	8	5	2	
- Involvement of local communities in planning research and implementation of studies and test projects	6	4	9		
- Consultation with local communities in the design and planning of studies and test projects	8	9	3		
- Minimization of environmental and social impacts on remote communities and the wildlife resources of the region	7	8	3		
- Easy access by officials of remote communities to information with respect to alternative energy research and test projects carried out within their region	4	3	11	2	
- Potential for the displacement of, or reduction in the use of petroleum - based fuels.	12	4	2		
- Potential to stir community action and outside support beyond that directly arising from this program	5	11	3	2	

Criteria	Very important	important	desirable	marginal	Not desirable
- Potential for wider scale application of the findings to other communities with similar problems or opportunities	7	9	3		
- Technical soundness of the proposed study	11	6	2		
- Technical capability of the applicant (or his consultant) to carry out the study	16	2	1		
- Reasonableness of the cost of the proposed study and the amount of contribution sought under the Program	8	9	1		
- Financial resources of the applicant	2	5	5	3	1
- Degree of cost sharing or participation by others in the study	4	4	6	3	
- Equitable distribution of Program funds among groups of remote communities	4	4	8	2	1
- Representative distribution of Program funds among various alternative energy supply and energy conservation solutions	5	4	4	4	
- Easy access by officials of remote communities to information with respect to alternative energy research and test projects carried out within their region	4	3	11	2	
- Potential for the displacement of, or reduction in the use of petroleum - based fuels.	12	4	2		
- Potential to stir community action and outside support beyond that directly arising from this program	5	11	3	2	

7.0 ABSTRACTS: REMOTE COMMUNITY ENERGY STUDIES

Electric power supply - Wemindji

Georges Tadros, Indian and Northern Affairs

Peak demand, 1981-82: 325 kW

A 900 kW increase is anticipated before 1987. Three alternatives are considered:

1. Conventional diesel generating station
2. Wood gasifier generating station
3. Mini-hydro generating plant.

Recommendations:

1. As far as DIAND is concerned, the best and least costly solution for supplying electricity to Wemindji is a conventional diesel generating station.

2. A dual (diesel and mini-hydro) system seems to be the most costly option.

3. A more detailed study of this possibility is recommended, as it may prove to be profitable in the long term.

4. Also recommended is a study of various sites in Wemindji for the construction of a mini-hydro plant with a minimum capability of 2 MW, which would be sufficient to meet all of the village's energy needs.

5. An agreement between the Department and Hydro Quebec should be signed so that the village can be interconnected to Hydro's grid.

Wemindji Energy Study

SNC. Prepared for the James Bay Energy Corporation, September 1982.

Presents a socio-economic profile covering population, facilities and present energy needs.

Presents energy demand for 1982 - 2032 which is based on a controversial computer program.

Compares alternatives for the production of energy:

Electrical generation:
1. Diesel
2. Interconnect to Hydro Quebec
3. Mini-hydro

Heating needs:
1. Wood heating
2. Oil heating
3. Electric heating with energy from provincial grid
4. Electric heating by mini-hydro.

Describes the path of optimum development based on the assumption of fourfold increase in energy demand 1982-2032.

Recommends: Mini-hydro (750 kw site M-1) to supply basic electrical needs and to meet future increases in demand. Heating by mini-hydro in conjunction with heating by wood and oil.

Comparative study of the district heating system and the project to rationalize domestic consumption in the Magdalen Islands

DLP consultants.
January 1982

Provides a summary of the proposed alternatives.

1. Study on the recuperation of diesel electric generator waste heat for district heating.
2. Rationalization of domestic consumption in the Magdalen Islands through a new rate structure program and compensation program.
    a) Convert electric heating to fuel oil heating system
    b) Retrofit all residential buildings.
    c) increase efficiency of existing oil heating systems to 65% from the present 55%, mostly through modernization of oil furnaces.

Summary of findings:

Economics dictates the use of a district heating system in Cap-aux-Meules and Etang-du-Nord. Will provide savings for Hydro Quebec after 1990.

Environmental and social protection regime north of the 55th parallel, Kativik

Environmental Advisory Committee.
April 1982.

Describes the environmental and social protection regime for Kativik territory recognized by the governments of Canada and Quebec under Chapter 23 of the James Bay and Northern Quebec Agreement. The Kativik Environmental Advisory Committee is composed of nine members: 3 federal, 3 Quebec, 3 Kativik Regional government.

Composition and mandate of the federal environmental and social impact assessment and review panel, and the federal screening committee.

Projects automatically subject to environmental and social impact studies:

1. Hydro-electric power plants.
2. Nuclear installations.
3. Storage and water supply reservoirs.
4. Transmission lines over 75 kw.
5. Fossil fuel fired power generating plants above 3000 kw.

Describes respective roles of federal government, Quebec government and Kativik regional government. pp 71-75 diagram these relationships.

Building at Kawawachikamach

Jeremy Jenkins, President Schelter Construction and Development Ltd. Glenncairn, Ontario. Designers of village.

Village will have 50 houses by 1983, 2 small apartments for young couples, church, works garage, band office, school, community centre and commercial building.

Provides town lay-out and building models and specifications.

Power supply to new Naskapi village

Montreal Engineering Co.
December 1981.

Analysis of system data and system considerations to determine alternative methods of supplying electricity to the village.

Recommendations:

1. A new 13.2 kv feeder be constructed and fed from the Schefferville Power Company's town substation to supply power to the new Naskapi village. Designed to carry an ultimate village load of 1100 kw.

2. A 13.2 kv to 4.16 kv step-down substation be established to supply the distribution system in the village.

3. 100 kw diesel generator for stand-by.

Agreement guaranteeing supply of wood biomass

Government of Quebec and Cree Regional Authority
1979.

Government grants Cree Regional Authority for 20 years 1979-1999 annual cutting rights of 20,000 cubic metres subject to certain stipulations and conditions.

Maquatua Power Project: Pre-feasibility study

SNC. Prepared for the James Bay Energy Corporation.
September, 1981.

Recommends the development of site M-1 and proposes sequence of construction. Estimates low potential for formation of frazil ice.

Examines basic hydrological data and optimal design for power and energy.

Recommends:

A mini-hydro plant with 500 kw installed capacity, partly used for heating. The balance of the heating demand would be provided by oil-fired facilities.

Analyses selection of generating equipment and electrical transmission/distribution system.

An analysis of alternative energy sources for the community of Wemindji.

Mac Gildor Consultants. University of Waterloo.
March, 1982.

Analysis of present energy demand and forecast demand.

Description of available energy sources: Forest biomass for power generation, hydro generation, forest biomass heating.

Examines 4 alternatives:

1. Diesel generators only
2. Diesel generators and wood stoves
3. Biomass gasification - combustion turbine generation
4. Hydro-electric, diesel generator, wood stove combination.

Recommends: Develop hydro-electric power potential of local river and install wood stoves in each house. Existing diesel generators to be used as back-up system.

Progress Report: Wemindji - Energy Study

Sores. Prepared for the James Bay Energy Corporation,
June 1982.

A study of the energy demand for Wemindji for fifty years and a brief description of the alternatives:

1. Additional diesel
2. Connection with Hydro Quebec transmission lines
3. Construction of mini-hydro plant.

Includes a socio-economic profile covering population, housing, businesses and institutional power station.

Energy profile, covers: heating surface, water heating, appliances, degree days, load factor, future demand.

Petroleum Report

Daigneault and Associates. James Bay Native Development Corporation
August 1981.

Consumption of petroleum products (monthly, annual) for Cree communities (including Ft. Rupert, Eastmain, Wemindji). This includes heating oil consumption and diesel generation consumption figures.

Projects petroleum consumption in 1986.

Investigates long term supply issues and proposes that a collective warehousing and distribution system be implemented (Barge delivery to Ft. Rupert, Eastmain and Wemindji from Chisasibi (LG-2). Effect of all this would be to eliminate Hudson Bay depots supply sources of petroleum products.

Exhibits include an energy data sheet on each community.

Site Inspection and Study of Power Distribution System: Rapid Lake

Georges Tadros, Indian and Northern Affairs.
April, 1981.

Examination of voltage drop problem and recommendations for its solution.

Recommendations:

1. Power station operation, although carried out by a Band, should be under the direct supervision of Indian & Northern Affairs. All necessary training and operating procedures will be provided by Indian and Northern Affairs' engineering and architecture services in Val d'Or and Quebec City.

2. All electrical services and appliances, such as heating, hot water tanks, dryers and stoves should be converted to gas or oil. The cost of the power generated by diesel engines for domestic services is five times the cost of the natural gas or fuel oil delivered on the reserve.

Replacement of diesel generators in Parent, Abitibi
Hydro-Quebec, 1981.

Confidential, not available.

Pre-feasibility study on grid extension to Wemindji
James Bay Energy Corporation
Prepared by Hydro-Quebec, November 1982.

Confidential, not available.

Feasibility study on grid connection for Parent, Abitibi
Hydro Quebec, 1982.

Confidential, not available.

Feasibility study on grid extension for the Lower North Shore
Hydro Quebec, 1981.

Confidential, not available.

Construction of a mini-hydro plant at Lake Robertson, Lower North Shore
Hydro Quebec, 1982.

Confidential, not available.

Study on the recuperation of diesel electric generator waste heat for district heating: Magdalen Islands, Quebec
DLP Consultants, 1981.
Revised March 1982.

PHASE I (Potential market)

Presents a methodology for calculating annual consumption and energy demand, as well as the survey results.

PHASE II (Availability of hot water for district heating)

Examines systems for recuperating exhaust gas and required control systems. Tables specify the amount of heat available from each generator.

PHASE III (Technical feasibility)

Study of distribution pumps and required installation in customers' homes.

PHASE IV (Economic feasibility)

Investment costs and results of cost/benefit analysis.

Recommendations:

Option No.15

a) Re-insulation of homes in Cap-aux-Meules and Etand-du-Nord.
b) Temperature of the hot water supplied to the district heating system: 120°C.
c) Indirect system. Independence of district heating system and customer's own water system allows for easier maintenance and servicing.
d) System with a temperature differential of 55°C.

Number of homes: 438

Number of institutions and businesses: 116

COSTS:

Hydro Quebec	$ 6.5 million
Government of Quebec	$ 4.8 million
Government of Canada	$ 9.3 million
TOTAL	$20.6 million

Plan for the development of an energy policy in remote regions

Rene Lalande and Real Carbonneau, Department of Energy and Ressources, December 1981.

Preliminary, comprehensive study of remote communities, dealing with seven regions or groups: Lower North Shore, Nouveau Quebec, Parent, Anticosti, the Cree, the Algonquin and the mining towns. An energy profile is developed for each.

The players are divided into three groups: the energy sector, government agencies and para-governmental agencies.

Priorities are specified for each region:

1. Lower North Shore
    a) Energy conservation
    b) Wind power
    c) Mini-hydro plants
    d) Exemplary energy community

2. Nouveau Quebec
    a) Energy efficient construction
    b) More important than simple technology, organizational structures and various types of co-ordinated action need to be developed and applied in accordance with local needs and concerns.

3. Anticosti and Parent

   a) Joint project funding
   b) Development of a methodology to adequately reflect all the benefits and costs of a project with wide social impact.
   c) Peat fuelled gasifier - Anticosti
   d) Cogeneration for Parent with Compagnie Scierie

4. The Cree and Algonquin

   a) Interconnect with Hydro Quebec
   b) Replacement of federal agencies in the region by SAGMAI

5. The mining towns

   a) Not a priority
   b) Energain - promotion of energy efficiency in residential sector.

A general survey of Inuit co-operatives

Government of Quebec
January 1982.

This survey is part of a comprehensive analysis of Inuit communities in Nouveau Quebec.

The authors have collected a wealth of information and data, which they have used to sketch a socio-economic profile.

The descriptions are based on information obtained mainly from various provincial government department. A detailed bibliography for each description appears in the first part of the study.

The descriptions cover the following points:
- Location
- Demography
- Manpower
- Economic activities
- Community services
- Residents' income and expenses.

There are summary tables comparing all the data mentioned and a list of municipalities divided into three equal sub-regions: Hudson Bay, Hudson Strait and Ungava Bay. The descriptions of all the municipalities have been standardized.

Study and list of projects for a corporation developing new forms of energy

Gaucher Pringle, Quebec Department of Energy and Resources,
1980.

Volume I -	Organization, programs and administration for Nouveler - a provincial Crown Corporation concerned with different forms of renewable energy.
Volume II -	The different technologies.

Prospective use and available resources for:

1. Solar energy
2. Wind power
3. Biomass

Construction of a thermoelectric power station in Parent

Quebec Department of Energy and Resources, J. Gagne Associe,
Novembre, 1979.

Analysis of different thermal equipment, including condenser, boiler feed pump, steam generator and turbo alternator.

The criteria for selecting the site are explained, as are the project plans. A careful analysis shows that operating costs of a thermoelectric power station to provide 15.6 million kWh per year would be 2.7¢ per kWh, or $553,200 per year. A total of 26 jobs would be created.

Recommendation:

Construction of this power station, based on residual forest biomass. Required investment: $4,000,000

Electric power supply: Weymontachie

Georges Tadros, Indian and Northern Affairs
February 1981.

Power station should be able to supply village needs for the next few years. Very reasonable annual load increase of 10%.

Following capital investment anticipated:

1.	1982-1982	$150,000	Plant and generator
2.	1982-1983	$ 65,700	Grid extension
3.	1983-1984	$ 35,839	Load levelling between phases and connection
4.	1984-1985	$ 12,985	Maintenance and testing
5.	1985-1986	$ 35,388	Maintenance and study.

Study of electric power needs: Obedjiwan

Georges Tadros, Indian and Northern Affairs,
June 1980.

Estimates a load of 280 kW, along with a 10% annual increase. These factors will contribute to this increase in demand:

1. Anticipated annual population growth of 30%.
2. New domestic service estimated at 69% per year.
3. New community service.

New generator needed immediately. A problem of unbalanced load between phases, caused by the haphazard connection of homes onto the grid and by the use of extension cables to interconnect homes.

Planning:

1980	Connection and load levelling between phases and generator	$200,000
1981	Grid extension	$100,000
1982	Extension	$ 75,000
1983	Load levelling between phases	$ 50,000
1984	Study of needs	$ 75,000

General principles and guidelines

Quebec Housing Corporation, Research and Standards Group,
September 1981.

The general principles apply to all programs and cannot be changed. The guidelines are to be used in program development and users should take into account regional disparities in Quebec.

Operational and technical directives, codes and standards, legislation applicable to residential and commercial construction in Nouveau Quebec.

Technical directives: materials, roofing, insulation and waterproofing, structure, plumbing, heating and ventilation, wiring and fire protection.

These standards are used in the construction of energy-efficient homes in Nouveau Quebec.

Housing in Nouveau Quebec

Quebec housing Corporation
September 1980.

This study is intended to provide the reader with an accurate picture of housing conditions in Inuit communities in Nouveau Quebec. The authors set out to identify all the elements necessary to develop policy and programs.

In order to do so, they:

a) sketch a history of government action with regard to housing in Inuit communities in Nouveau Quebec;

b) draw up a quantitative and qualitative inventory of existing housing and identify current and future needs;

c) list the technical requirements for community housing;

d) define the elements necessary for the development of a new government housing policy in these communities.

Divided into four chapters.

Budget planning: Fort Rupert

Georges Tadros, Indian and Northern Affairs
May 1981.

List of existing installations.
Construction of a new diesel-powered generating station in Fort Rupert estimated at $1,635,000.

Includes a table giving operating costs for the generating station.
1981-82: $360,000 (fuel included).

Annex 2

September 29, 1982.
Kuujjuaq, Quebec.

REMOTE COMMUNITY DEMONSTRATION PROGRAM: PROPOSED DRAFT PRINCIPLES OF MAKIVIK CORPORATION AND KATIVIK REGIONAL GOVERNMENT REGARDING ALTERNATE ENERGY AND ENERGY CONSERVATION STUDIES AND DEMONSTRATION PROJECTS IN NORTHERN QUEBEC.

The following constitute a list of proposed draft principles prepared jointly by Makivik Corporation and Kativik Regional government with respect to the undertaking of studies and demonstration projects related to alternate energy and energy conservation pursuant to the Remote Community Demonstration Program of Energy, Mines and Resources Canada. This list is not exhaustive but does represent our more major concerns at the present time:

1. Inuit participation in studies and test projects regarding alternate energy initiatives at the community level: Such participation is to include training and employment of Inuit; meaningful involvement in planning, research and implementation of studies and test projects; and full participation in the cost-saving and other benefits of alternate energy programs.

2. Adequate and meaningful consultation with Inuit communities and their inhabitants with respect to:

    a. Various types of alternate energy available to northern Quebec communities;

    b. Design and planning of studies regarding alternate energy systems for northern Quebec communities;

    c. Design and planning of actual test projects for alternate energy for northern Quebec communities;

    d. Implementation of any studies and test projects with respect to alternate energy for northern Quebec communities.

3. Environmental and Social Impact: Any research or test projects with respect to alternate energy for northern Quebec communities must be so designed and implemented as to minimize environmental and social impacts upon the said communities and their inhabitants and the wildlife resources of the region.

4. Access to information: The Inuit communities and their residents must have easy access to any information with respect to alternate energy research and test projects for northern Quebec communities as well as any information related to their implementation and possible impacts of such research and test projects. Periodic briefing sessions, radio programs and information circulars may be necessary for this purpose. All documentation should be in English, French and Inuktitut.

5. Funding for Inuit Communities: Government funds should be made available to local communities and regional organizations:

    a. To generally encourage Inuit participation in the planning and implementation of alternate energy research and test projects for northern Quebec communities;

    b. to facilitate and encourage participation of residents in information programs referred to above;

    c. to assist in providing training programs referred to above.

6. Back-up Energy Sources to Alternate Energy Programs: The alternate energy program must respect the principle that due to harsh climatic conditions in northern Quebec, any alternate energy program must consider a back-up energy supply. That is, the principle of dual or greater energy systems for northern Quebec communities should be respected and any research and test projects with respect to alternate energy for northern Quebec communities.

7. Traditional Activities: Measures must be taken to assure that any research and test projects with respect to alternate energy programs for northern Quebec communities do not substantially interfere with or negatively affect traditional activities of Inuit in the region.

8. Comprehensive Research: Research into sources of alternate energy appropriate to northern Quebec communities should include a comprehensive analysis and study of wind, solar, biomass and hydro energy sources to determine those most effective and appropriate for demonstration projects. We are not interested in creating prototypes which will operate for a few seasons and then cease to function. Of special interest are renewable energy systems of a reliable and relatively efficient nature.

9. Energy Conservation: Research into appropriate techniques and systems of energy conservation is a necessary part of any alternate energy program for the northern communities. There is little point in finding alternate energy sources if the design and construction of buildings serve only to waste this energy. Energy conservation research and demonstration programs are particularly rich sources of training and employment for Inuit. Items 1-5 and 7-8 of the present list would apply mutatis mutandi to energy conservation research and projects as well.

SOCIO-ECONOMIC PROFILE

Community: TASIUJAQ **Ecoregion:** NOUVEAU QUEBEC

1.0 LOCATION

58° N
69° 55' W

The community of Tasiujaq, known as Leaf Bay or Baie aux Feuilles, is located on the western shore of the Finger River, where it flows into Leaf Bay. The settlement is situated on a flat piece of land approximately 13 km (8 m) southeast of the mouth of the Leaf River.

2.0 TOPOGRAPHY

The community is located 4.5 km (3 m) north of the treeline in the barren ground of Northern Quebec. The inland area south of the community is a plateau region of rolling hills with elevations rising to 346 m (1125 ft).

3.0 CLIMATE

The climate of Tasiujaq is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 13°C with a maximum of 18°C and a minimum of 4°C. The average January temperature is -23°C with a maximum of -18°C and a minimum of -29°C.

4.0 HISTORY

The community's Inuktitut name Tasiujaq means "False Lake". The settlement, river and bay derive their English name from the Hudson Bay Company traders who frequented the region in the 1830s. In 1912, R.J. Flaherty, a well-known Arctic Quebec traveller, explored the Leaf River and Bay region from the eastern Hudson Bay coast along the Minto Lake route.

5.0 DEMOGRAPHY

In 1980, the population of Tasiujaq consisted of 19 Inuit families for a total of 106 individuals. No data is available on the non-Inuit population.

The Inuit population is composed of 55 females and 51 males. It is divided into the following age groups: 49 individuals of 15 years of age or less from the first group and represent 46% of the total Inuit population; 26 people aged from 16 to 25 years from the second group, which represents 25% of the total Inuit population and finally, the third group is made up of 31 individuals aged 26 to 85 years who account for 29% of the total Inuit population.

The average household size is 8; the largest unit is a 12-person household and the smallest one is a 4-person household.

Over the last ten years the population of Tasiujaq has increased from 59 to 106 people. Births being more numerous than deaths, the populations is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Tasiujaq is linked by airline services to southern Quebec via Kuujjuaq, the regional administrative centre for the communities of the Ungava Bay coast.

Administrative bodies in the community comprise local government and the community council, which manage municipal service, and the Argivik Corporation, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement.

7.0 ECONOMY

7.1 Major activities

In Tasiujaq between 1973-78, 23% of the harvest was derived from marine mammals and 77% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Tasiujaq consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage-earning work force of 44, representing 44% of the total population. In March 1980, 100% of the eligible Inuit labor force held full or part-time employment.

The Cooperative, Air Inuit and a number of Inuit outfitting camps are the principal commercial employers. The local government and community council, the Kativik School Board, the Inuit Landholding Corporation, the Department of Social Affairs and the Department of Public Works and Supply are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Initial harvest collection data show that over 49,000 kg (100,000 lbs) of edible meat are derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

Iron and copper ore deposits and a number of potential uranium finds.

10.0 PRICES AND INCOME

Total income for the community of Tasiujaq in the year 1976 was $280,000.00 representing a per capita revenue of $2,808.00 or $14,821.00 per family.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located 2.4 km (1.5 m) south of the settlement along the Finger River. Water is collected and delivered by one 600 gallon muskeg-tracked vehicle in summer and winter. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 75,000 gallons, representing a per capita use of 2 gallons per day.

11.2 Sanitation

Since there is no sewage system in Tasiujaq, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Garbage is picked up daily, with home collection of sewage and solid wastes. The dump site is located approximately .8 km (.5 m) south of the community and .4 km (.25 m) from Finger River. The dump uses open incineration and there are no land-fill operations. In summer a pick-up truck is used to collect solid and sewage wastes, and in winter, snowmobiles are used.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airline, Air Inuit, offers flights to the community 3 times per week. Nordair provides 737 jet service between Kuujjuaq and Montreal 4 to 6 times per week.

12.2 Road

There are .6 km (.37 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Communication services to the south are provided by Telesat Canada via a direct Anik satellite telephone connection through Ottawa, to all points outside the community. Local forms of communication include a community FM station and interhome telephone services. Canada Post provides regular mail service.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services, including one nursing station staffed by two nurses and an Inuit nurse's aide.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by the Quebec Police Force stationed in Kuujjuaq.

14.4 Religion

Religious services are offered by the Anglican Mission.

15.0 EDUCATION

Primary education is offered by the Kativik School Board. There is one school.
Total: 43 students.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: TASIUJAQ Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro-Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: None

4.4 total: 325 432 Subscriptions: 30 82-03-01

5.0 Peak load (kWh): 100

5.1 Peak load date: 82-01-20

6.0 Tarification:

D3	23.0¢ fixed charge per day, plus 2.7¢ per kwh for the first 20 kwh per day. 15.0¢ per kwh for the remaining consumption.
G1	Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.
19	Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

143 100 litres.

9.0 Annual heating oil consumption

190 000 litres

10.0 Total diesel fuel and heating oil consumption

333 100 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.5375¢/litre

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

Year	MHW	KW	Year	MHW	KW
81-82	Unknown	100	86-87	Unknown	200
82-83	±	125	87-88	±	210
83-84	±	165	88-89	Not available	
84-85	±	175	89-90	±	±
85-86	±	190	90-91	±	±
			91-92	±	±

15.0 Inventory of building stock

1. Warehouses: 1 COOP
2. Garage: none
3. Office building: (1)
4. Firehall: none
5. Laundry: none

16.0 Diesel installations

42083	No. of Units
Caterpillar D-3304 series 4B-10113	
Caterpillar 3406-DIT series 90U15814	
Caterpillar 3406-DIT series 90U15856	

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Proposed energy conservation projects Projects: Improvements to installations.
2. Rate structure change	
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High 3,4,5
5. Time of use measures	Low 1,2

REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Projects:
3. Wind/diesel systems	
4. Wood biomass	
5. Peat biomass	Feasibility High 2,3
	Low 1,4,5

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit	Studies: Projects:
2. Insulation retrofit	
3. Air envelope retrofit	
4. Window/door retrofit	
5. Super-efficient norms for new construction	
6. Set-back thermostat	
7. Hot water heating conservation measures	
8. Higher efficiency furnace retrofit	Feasibility High 1,2,3,4,5,6,7,8,10,11
9. Heat pumps	Low 9
10. Waste heat recovery	
11. Energy conservation education	

REPLACEMNT OPTIONS	
1. Connection to main grid	
2. Rate structure change for oil based electrical heating	Studies: Projects:
3. Cogeneration	
4. District heating	
5. Wind systems	
6. Wood systems	
7. Peat systems	Feasibility
8. Active solar	High 2,3,5,8
	Low 1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: KUUJJUAQ **Ecoregion:** NOUVEAU QUEBEC

1.0 LOCATION

58° 05' N
68° 24' W

The community of Kuujjuaq is located on the western shore of the Koksoak River some 51 km (32 m) inland from Ungava Bay.

2.0 TOPOGRAPHY

The community is located at the northern extent of the treeline, in the taiga region of Northern Quebec. The inland area in the vicinity of Kuujjuaq is a plateau region of rolling hills with elevations rising to 285 m (925 ft). Three major drainage basins are located in the Kuujjuaq region: the Whale, False and Koksoad Rivers.

3.0 CLIMATE

The climate of Kuujjuaq is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 13°C with a maximum of 18°C and a minimum of 7°C. The average January temperature is -23°C with a maximum of -18°C and a minimum of -29°C.

Kuujjuaq is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name means "Great River". The settlement derives its English name of Fort Chimo from the Hudson Bay Company traders who frequented the region in the 1830s.

5.0 DEMOGRAPHY

In 1979, the population of Kuujjuaq consisted of 1068 individuals, 818 of them Inuit. The community is made up of 235 families, 192 of which are Inuit.

The Inuit population is composed of 409 females and 409 males. It is divided into the following age groups: 398 individuals of 15 years of age or less form the first group and represent 49% of the total Inuit population; 151 people aged from 16 to 25 years form the second group, which represents 18% of the total Inuit population and finally, the third group is made up of 269 individuals aged 26 to 85 years who account for 33% of the total Inuit population.

The average household size is 7; the largest unit is a 16-person household and the smallest ones are the single-person households.

Over the last ten years the population of Kuujjuaq has increased from 523 to 1068 people. Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Administrative bodies in the community comprise local government and the community council, which manage municipal service , the Nayumivik Corporation, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement, the Kativik School Board parents' committee and the health committee.

Kuujjuaq is the regional administrative centre for the Ungava communities.

7.0 ECONOMY

7.1 Major activities

In Kuujjuaq between 1973-78, 16.5% of the harvest was derived from marine mammals and 83.5% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Kuujjuaq consists of hunting, fishing and trapping. These ctivities not only provide money but also food for the community. There is a potential wage earning work force of 320, representing 39% of the total population. In March 1980, 69% of the eligible Inuit labor force held full or part-time employment.

The Hudson's Bay Company, the Cooperative, Johnny May's Air Service, Air Inuit Ltd, the Canadian Imperial Bank of Commerce and a number of Inuit outfitting camps are the principal commercial employers. The local government and community council the Kativik School Board, the Inuit Landholding Corporation, the provincial Department of Public Works and Supply and Transport Canada are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurses' aides.

7.4 Tourism

The community offers outfitting services to tourists for char and salmon fishing and for caribou hunting.

8.0 RENEWABLE RESOURCES

Initial harvest data show that over 220,000 kg (500,000 lbs) of edible meat are derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

Iron and copper ore deposits.

10.0 PRICES AND INCOME

Total income for the community of Kuujjuaq in the year 1976 was $1,956,416.00 representing a per capita revenue of $2,464.00 or $14,742.00 per family. The breakdown of this total revenue from hunting, fishing and trapping, arts and crafts, self-employment, commercial employment and public employment is not yet available.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is a small lake formed by a dam made of cement and earth, on a stream located at the northern limit of the community. Water collected and delivered in summer and winter by three 1000 gallon and one 1200 gallon water tank trucks. Residents store water in 50 to 250 gallon tanks. A number of homes have an internal plumbing system. In the summer of 1980, the community installed a filtration plant with a capacity of 100,000 gallons.

11.2 Sanitation

Since there is no sewage system in Kuujjuaq, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site. A number of houses have tanks that hold dewage. Two tank trucks with a capacity of 1600 and 1000 gallons are used for the daily collection of sewage.

Garbage is also collected on a daily basis by four trucks, one of which has a compactor. The dump site is located 4 km (2.5 m) northwest of the community. The methods used at the dump site are open incineration and landfill operations. Solid waste collection is collected by two 3 ton and one 5 ton capacity trucks.

12.0 TRANSPORTATION

12.1 Air facilities

The community is linked directly to southern Quebec via regular flights provided by Nordair, four to six times per week depending on the season. Kuujjuaq is the base of Air Inuit, a subsidiary of the Makivik Corp. and it offers regular service to the Ungava Bay and Hudson Strait communities.

The paved airstrip is equipped with a full instrument landing system.

12.2 Road

There are 5 miles of community roads.

12.3 Water

The annual summer sealift, which transport bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication. Canada Post provides regular mail service. There is a local TV station (pre-recorded video tapes), with CBC commencing service later in 1981. The community now has a dish for satellite reception.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services including one hospital, staffed by a number of nurses, nurse's aides and about 3 doctors. A new hospital is expected to be opened by 1982. A health committee was also formed in the community of Kuujjuaq.

14.2 Social services

Other provincial services include an Unemployment Insurance office, a social services bureau and a police station.

14.3 Protection

Kuujjuaq is the headquarters for police service for the Ungava Bay district. The force consists of one corporal and three constables of the Quebec Police Force.

14.4 Religion

Religious services are offered by both the Roman Catholic and Anglican missions.

15.0 EDUCATION

Primary education is offered by the Kativik School Board. At present there are eight schools.
Total: 298 students.

16.0 BASIC NEEDS

A quick review of the information contained in this document reveals that some of the most urgent and crucial needs of Kuujuuaq include new upgraded housing to meet the immediate shortages and the development of adequate water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: KUUJJUAK (FT. CHIMO) Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro-Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: None

4.4 total: 4 389 361 Subscriptions: 330 (82-03-01)

5.0 Peak load (kWh): 1120

5.1 Peak load date: 82-01-26

6.0 Tarification:

D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per kwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

1 884 000 litres

9.0 Annual heating oil consumption

2 495 000 litres

10.0 Total diesel fuel and heating oil consumption

4 379 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.4783¢ (82-06-09)

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Unknown	1120	86-87	Unknown	1505
82-83	±	1200	87-88	±	1580
83-84	±	1250	88-89	Not available	
84-85	±	1340	89-90	±	±
85-86	±	1435	90-91	±	±
			91-92	±	±

15.0 Inventory of building stock

1. Warehouses: 1 municipal
   2 COOP
   2 HBCo
2. Garage: 2 municipal
3. Office building: (1)
4. Firehall: (1)
5. Laundry: (1)

16.0 Diesel installations

42083	kW	No of Units
Caterpillar D-399 series 35B-1359		
Caterpillar D-399 series 35B-4799		
Caterpillar D-399 series 35B-2574		
Lister-Ens-8 series E66436		
Caterpillar D-333 series 66D-6229 (stand by)		

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 818
Total no. of families: 155
No. of houses occupied: 120
Average no. of families per house: 1.5
Maximum: 2 Minimum: 1
Average no. of occupants per house: 7
Maximum: 16 Minimum: 4
No. of houses habitable: 103

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	7	10		97	5	1		
B) Ideal Community Distribution of houses			4	80	33	21	17	18-23
C) Immediate Community needs for housing					11	10	10	5

Kuujuak

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Proposed energy efficiency projects Projects: Improvements to installations. Possibly including heat recovery Feasibility High 3,4,5 Low 1,2
REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Projects: Feasibility High 2,3 Low 1,4,5

Kuujjuaq

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects.

Projects: Quebec Housing Corporation building

Completed energy studies
SHG General and guiding principles 1980
Quebec Housing Corporation

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies: Completed energy studies

Projects: Environmental and Social Protection Regime North of the 55th parallel.
KATIVIK Environmental Advisory Committee, April 1982.

Feasibility

High	2,3,5,8
Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: AKULIVIK **Ecoregion:** NOUVEAU QUEBEC

1.0 LOCATION

60° 48' N
78° 08' W

The community of Akulivik, known as Cape Smith, is located on the east coast of Hudson Bay, on the north side of a peninsula situated at the mouth of the Illukotat River. Originally the community was on Smith Island, 3.2 km (2 m) west of the present settlement site.

2.0 TOPOGRAPHY

The community is located in the barren coastal region of Northern Quebec. The inland area east of the community is montainous with elevations rising to 376 m (1225 ft).

3.0 CLIMATE

The climate of Akulivik is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 7°C with a maximum of 13°C and a minimum of 4°C. The average January temperature is -23°C with a maximum of -21°C and a minimum of -29°C.

Akulivik is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name Akulivik means "The point of a fishing spear". The settlement and island derive their English name, Cape Smith, from AP Low, who in 1899 explored the region on behalf of the Geological Survey of Canada.

5.0 DEMOGRAPHY

In 1980, the population of Akulivik consisted of 60 Inuit families for a total of 241 individuals. No data is available on the non-Inuit population.

The Inuit population is composed of 121 females and 120 males. It is divided into the following age groups: 105 individuals of 15 years of age or less from the first group and represent 44% of the total Inuit population; 48 people aged from 16 to 25 years from the second group which represents 20% of the total Inuit population and finally, the third group is made up of 88 individuals aged 26 to 85 years who account for 36% of the total Inuit population.

The average household size is 10; the largest unit is a 12-person household and the smallest one is the one-person household.

Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Akulivik is linked by airline services to southern Quebec via Kuujjuaraapik, the regional administrative centre for the communities of the eastern Hudson Bay coast.

Administrative bodies in the community are comprised of local government and the community council, which manage the municipal service, and the Qikeirriaq Corporation of Akulivik, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement.

7.0 ECONOMY

7.1 Major activities

In Akulivik between 1973-78, 31% of the harvest was derived from marine mammals and 69% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Akulivik consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage-earning work force of 82, representing 31% of the total population. In March 1980, 61% of the eligible Inuit labor force held full or part-time employment.

The Cooperative and Austin Airways are the principal commercial employers. The local government and community council, the Kativik School Board, the Inuit Landholding Corporation and the Department of Public Works and Supply are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Initial harvest collection data show that over 99,000 kg (219,000 lbs) of edible meat are derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

Nickel.

10.0 PRICES AND INCOME

Total income for the community of Akulivik in the year 1976 was $228,054.00 representing a per capita revenue of $1,146.00 or $6,735.00 per family.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located on the Illukotak River 1.6 km (1 m) upstream from the settlement.

In winter water is collected and delivered by one 800 gallon muskeg-tracked vehicle and in summer by one 1000 gallon water tank truck. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 200,000 gallons, representing a per capita use of 2.5 gallons per day.

11.2 Sanitation

Since there is no sewage system in Akulivik, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Garbage is picked up daily, with home collection of dewage and solid wastes. The dump site is located 2.4 km (1.5 m) east of the community. The dump uses open incineration and there are no landfill operations. Solid waste is collected in summer by one garbage truck with compactor and in winter by a muskeg-tracked vehicle.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airline, Austin Airways, offers flights to the community 3 times per week. Nordair provides 737 jet service between Montreal and Kuujjuaraapik 4 to 6 times per week.

12.2 Road

There are .7 km (.4 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication. Canada Posts provides regular mail service.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services including a small nursing station staffed by two nurses and an Inuit nurse's aide.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by the Quebec Police Force stationed in Kuujjuaraapik.

14.4 Religion

Religious services are offered by the Anglican mission.

15.0 EDUCATION

Primary education is offered by the Kativik School Board. There are two schools.
Total: 78 students.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: AKULIVIK Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: Domestic without heating

4.2 commercial: General without heating

4.3 industrial: None

4.4 total: 395 185 Subscriptions: 85 (82-03-01)

5.0 Peak load (kWh) 120

5.1 Peak load date: Inconnu

6.0 Tarification: D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per pwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises for outdoor heating is forbidden.

19 Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization

8.0 Annual diesel fuel consumption

216 000 litres

9.0 Annual heating oil consumption

391 732 litres

10.0 Total diesel fuel and heating oil consumption

607 732 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.5375¢/litre

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	120	86-87	Not known	250
82-83	±	170	87-88	±	265
83-84	±	195	88-89	Not available	
84-85	±	230	89-90	±	±
85-86	±	240	90-91	±	±
			91-92	±	±

15.0 Inventory of building stock

1. Warehouses: 1 COOP
2. Garage: 1 municipal
3. Office building: (1)
4. Firehall: none
5. Laundry: none

16.0 Diesel installations

42083	kW	No of Units
Caterpillar D-3304 series 4B-17094	90	1
Caterpillar 3406-DIT series 90U15889	175	2
Caterpillar 3406-DIT series 90U15808	175	3

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 199
Total no. of families: 43
No. of houses occupied: 36
Average no. of families per house: 1
Maximum: 3 Minimum: 1
Average no. of occupants per house: 6
Maximum: 12 Minimum: 1
No. of houses habitable: 6

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle 2-bedr. pre 1970 houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	30		12				
B) Ideal Community Distribution of houses			20	7	12	1	5
C) Immediate Community needs for housing			14	7	12	1	1

Akulivik

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects

Projects: Improvements to installations

Feasibility

High	3,4,5
Low	1,2

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:

Projects:

Feasibility

High	2,3
Low	1,4,5

Akulivik

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies:

Projects:

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:

Projects:

Feasibility

High	2,3,5,8
Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: QUAQTAQ   **Ecoregion**: NOUVEAU QUEBEC

1.0 LOCATION

61° 02' N
69° 38' W

The community of Quaqtaq is located on the eastern shore of Diana Bay. The settlement is situated in a small valley and is some 5 km (3 m) south of Hudson Strait.

2.0 TOPOGRAPHY

The community is located in the barren ground of Northern Quebec. The inland area south and southwest of Quaqtaq is mountainous with elevations rising to 412 m (1340 ft).

3.0 CLIMATE

The climate of Quaqtaq is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 7°C with a maximum of 10°C and a minimum of 4°C. The average January temperature is -20°C with a maximum of -18°C and a minimum of -23°C.

Quaqtaq is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name Quaqtaq means "Frozen Place". Diana Bay derives its name from the ship used by A.P. Low, when he explored the Quaqtaq region, in 1988 on behalf of the Geological Survey of Canada.

5.0 DEMOGRAPHY

In 1980, the population of Quaqtaq consisted of 163 individuals, 157 of them Inuit. The community comprises 26 Inuit families.

The Inuit population is composed of 83 females and 76 males. It is divided into the following age groups: 74 individuals of 15 years of age or less from the first group and represent 47% of the total Inuit population; 37 people aged from 16 to 25 years from the second group which represents 23% of the total Inuit population and finally, the third group is made up of 48 individuals aged 26 to 85 years who account for 30% of the total Inuit population.

The average household size is 7.5; the largest unit is a 10-person household and the smallest ones are the one-person households.

Over the last ten years the population of Quaqtaq has increased from 93 to 163 people. Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Quaqtaq is linked by airline services to southern Quebec via Kuujjuaq, the regional administrative centre for the communities of the Ungava Bay coast.

Administrative bodies in the community are comprised of local government and the community council, which manage municipal services and the Tuvaaluk Corporation, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement.

7.0 ECONOMY

7.1 Major activities

In Quaqtaq between 1973-78, 76% of the harvest was derived from marine malls and 24% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Quaqtaq consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage earning work force of 56, representing 37% of the total population. In March 1980, 55% of the eligible Inuit labor force held full or part-time employment.

The Cooperative and Air Inuit are the principal commercial employers. The local government and community council, the Kativik School Board, the Inuit Landholding Corporation, the Department of Public Works and Supply and the Department of Environment are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Initial harvest collection data show that over 42,000 kg (94,000 lbs) of edible meat are derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

Iron or copper ore deposits.

10.0 PRICES AND INCOME

Total income for the community of Quaqtaq in the year 1976 was $477,300.00 representing a per capita revenue of $3,182.00 or $18,225.00 per family.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located at a small lake 1.6 km (1 m) east of the settlement. Water is collected and delivered in winter by one 600 gallon muskeg-tracked vehicle and in summer by one 1000 gallon water tank truck. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 110,000 gallons, representing a per capita use of 2 gallons per day.

11.2 Sanitation

Since there is no sewage system in Quaqtaq, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Garbage is picked up daily, with home collection of sewage and solid wastes. The dump site is located 1.6 km (1 m) northeast of the community behind the airstrip. The dump uses open incineration and there are no land-fill operations. In winter a muskeg-tracked vehicle is used to collect wastes; in summer a garbage truck is used.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airline, Air Inuit, offers flights to the community twice a week. Nordair provides 737 jet service between Kuujjuaq and Montreal 4 to 6 times per week.

12.2 Road

There are 1 km (.6 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication. Canada Posts provides regular mail service.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services including one nursing station staffed by two nurses and an Inuit nurse's aide.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by the Quebec Police Force stationed in Kuujjuaq.

14.4 Religion

Religious services are offered by both the Roman Catholic and the Anglican missions.

15.0 EDUCATION

Primary education is offered by the Kativik School Board. There are two schools.
Total: 71 students.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: QUAQTAQ Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro-Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: None

4.4 total: 620 246

5.0 Peak load (kWh): 180

5.1 Peak load date: 82-02-05

6.0 Tarification: D3 23.0 ¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per kwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

264 000 litres

9.0 Annual heating oil consumption

319 000 litres

10.0 Total diesel fuel and heating oil consumption

583 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.4783¢/litre

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	180	86-87	Not known	270
82-83	±	215	87-88	±	285
83-84	±	215	88-89	Not available	
84-85	±	245	89-90	±	±
85-86	±	255	90-91	±	±
			91-92	±	±

15.0 Inventory of building stock

1. Warehouses: 2 municipal
   1 COOP
2. Garage: 1 municipal
3. Office building: (1)
4. Firehall: none
5. Laundry: none

16.0 Diesel installations

42086	kW	No of Units
Caterpillar D-333 series 66D-6498	135	2
Caterpillar D-3306 series 66D-15796	135	1
Caterpillar D-3408 series 67U07854	265	3
Caterpillar D-3408 series 67 U07902	265	4

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 153
Total no. of families: 32
No. of houses occupied: 27
Average no. of families per house: 1
Maximum: 2 Minimum: 1
Average no. of occupants per house: 6
Maximum: 10 Minimum: 1
No. of houses habitable: 22

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	3	1		19	1	2		
B) Ideal Community Distribution of houses				13	5	8	3	5-6
C) Immediate Community needs for housing					2	3	2	1-2

Quaqtaq

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects:

Projects: Improvements to installations

Feasibility

High	3,4,5
Low	1,2

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:

Projects:

Feasibility

High	2,3
Low	1,4,5

Quaqtaq

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS — STUDIES AND FEASIBILITY

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies:
Projects:

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,3,5,8
Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: KANGIQSUK Ecoregion: NOUVEAU QUEBEC

1.0 LOCATION

60° 00' N
70° 00'W

The community of Kangiqsuk, known as Payne Bay or Bellin, is located on the north shore of the Payne River some 13 km (8 m) upstream from Ungava Bay.

2.0 TOPOGRAPHY

The community is located in the barren ground of Northern Quebec. The inland area west and south of the community is a flat, low lying plateau of wetlands and marshes, with elevations rising to 292 m (950 ft).

3.0 CLIMATE

The climate of Kangiqsuk is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 10° C with a maximum of 13°C and a minimum of 4°C. The average January temperature is -20°C with a maximum of -18°C and a minimum of -26°C.

Kangiqsuk is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name Kangiqsuk means "The Bay". The settlement and river derive their English and French names from explorers and traders who frequented the region in the late 1800s and early 1900s.

5.0 DEMOGRAPHY

In 1980, the population of Kangiqsuk consisted of 279 Inuit, with a total of 56 Inuit families. No data is available on the non-Inuit population.

The Inuit population is composed of 144 females and 135 males. It is divided into the following age groups: 137 individuals of 15 years of age or less from the first group and represent 49% of the total Inuit population; 42 people aged from 16 to 25 years form the second group which represents 15% of the total Inuit population and finally, the third group is made up of 100 individuals aged 26 to 85 years who account for 36% of the total Inuit population.

The average household size is 7.5; the largest unit is a 10-person household and the smallest ones are the 2-person households.

Over the last ten years, the population of Kangiqsuk has increased from 192 to 279 people. Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Kangiqsuk is linked by airline services to southern Quebec via Kuujjuaq, the regional administrative centre for the communities of the Ungava Bay coast.

Administrative bodies in the community comprise local government and the community council, which manage municipal service, and the Saputik Corporation, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement.

7.0 ECONOMY

7.1 Major activities

In Kangiqsuk between 1973-78, 42% of the harvest was derived from marine mammals and 58% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Kangiqsuk consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage earning work force of 83, representing 32% of the total population. In March 1980, 40% of the eligible Inuit labor force held full or part-time employment.

The Hudson's Bay Company, the Cooperative, Air Inuit and a number of Inuit outfitting camps are the principal commercial employers. The local government and community council, the Kativik School Board, the Inuit Landholding Corporation, the Department of Social Affairs and Department of Public Works and Supply are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Initial harvest collection data show that over 98.000 kg (200,000 lbs) of edible meat are derived from land and marine ressources.

9.0 NON RENEWABLE RESOURCES

Iron and copper ore deposits.

10.0 PRICES AND INCOME

Total income for the community of Kangiqsuk in the year 1976 was $528,101.00 representing a per capita revenue of $2,039.00 or $2,236.00 per family.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located at Pause Lake some 3.2 km (2 m) north of the settlement.

In winter water is collected and delivered by one 250 gallon and one 500 gallon muskeg-tracked vehicle; in summer the service is completed by one 1000 gallon water tank truck. Residents store water in 50 to 250 gallon tanks. A small number of homes have an inter plumbing system.

The approximate annual use of water by Inuit is 320,000 gallons, representing a per capita use of 3.3 gallons per day.

11.2 Sanitation

Since there is no sewage system in Kangiqsuk, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Garbage is picked up daily, with home collection of sewage and solid wastes. The dump site is located 1.6 km (1 m) northeast of the community. The dumpsite uses open incineration and there are no landfill operations. Garbage is collected by one muskeg-tracked vehicle and one truck.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airline, Air Inuit, offers flights to the community 3 times a week. Nordair provides 737 jet service between Kuujjuaq and Montreal 4 to 6 times per week.

12.2 Road

Local modes of transportation include snowmobile, canoe, speedboats and 4-wheel drive vehicles. There are 1.3 km (.8 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication. Canada Post provides regular mail service.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Ministry of Social Affairs provides health services including a nursing station serviced by two nurses and an Inuit nurse's aide. There is also a QPP station in Kangiqsuk.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by a special Inuk constable of the Quebec Police Force.

14.4 Religion

Religious services are offered by the Anglican Mission.

15.0 EDUCATION

Primary education is offered by the Kativik School Board.
Total: 97 students.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: KANGIQSUK Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro-Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: None

4.4 total: 637 038 Subscriptions: 75 (82-03-01)

5.0 Peak load (kWh): 195

5.1 Peak load date: 82-01-13

6.0 Tarification:

D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per kwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

336 000 litres

9.0 Annual heating oil consumption

403 000 litres

10.0 Total diesel fuel and heating oil consumption

739 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.4783¢/litre

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen.

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	195	87-88	Not known	315
82-83	±	225	88-89	Not available	
83-84	±	225	89-90	±	±
84-85	±	275	90-91	±	±
85-86	±	285	91-92	±	±
86-87	±	300			

15.0 Inventory of building stock

1. Warehouses: 4 municipal
   4 COOP
   5 HBCo
2. Garage: 2 municipal

3. Office building: (1)

4. Firehall: none

5. Laundry: none

16.0 Diesel installations

42083	kW	No of Units
GM 6D57N series GR6T1006E	100	2
Caterpillar D-343 series 62B-14020	250	1
Caterpillar D-343 series 62B-17735	250	3

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 260
Total no. of families: 55
No. of houses occupied: 40
Average no. of families per house: 1
Maximum: 2 Minimum: 1
Average no. of occupants per house: 6
Maximum: 10 Minimum: 2
No. of houses habitable: 39

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses		1		38		1		
B) Ideal Community Distribution of houses			1	16	12	15	2	6
C) Immediate Community needs for housing					1	6	1	1-2

Kanqiksuk

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects

Projects: Improvements to installations

Feasibility

High	3,4,5
Low	1,2

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:

Projects:

Feasibility

High	2,3
Low	1,4,5

Kanqiksuk

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,3,5,8
Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: AUPALUK Ecoregion: NOUVEAU QUEBEC

1.0 LOCATION

59° 18' N
69° 40' W

The community of Aupaluk is located on the eastern shore of Funnel Cove, which is a small inlet situated along the south shore of Hopes Advance Bay.

2.0 TOPOGRAPHY

The community is located in the barren ground of Northern Quebec.

3.0 CLIMATE

The climate of Aupaluk is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 10°C with a maximum of 13°C and a minimum of 4°C. The average January temperature is -23°C with a maximum of -18°C and a minimum of -29°C.

Aupaluk is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name Aupaluk means "Red Color". The settlement was established in 1979 by a group of families from Kangiqsuk (Payne Bay), an Inuit settlement located some 80 km (50 m) to the north. Prior to the final selection of the community site at Funnel Cove, a number of families lived in camps located across from Hopes Advance Bay at Merganser Point and at the mouth of the Red Dog River.

5.0 DEMOGRAPHY

In 1980, the population of Aupaluk consisted of 102 Inuit, with a total of 14 Inuit families. No data is available for non-Inuit.

The Inuit population is composed of 57 females and 45 males. It is divided into the following age groups: 53 individuals of 15 years of age or less form the first group and represent 52% of the total Inuit Population; 18 people aged from 16 to 25 years form the second group, which represents 18% of the total Inuit population and finally, the third group is made up of 31 individuals aged 26 to 85 years who account for 30% of the total Inuit population.

The average household size is 8; the largest unit is a 12-person household and the smallest ones are the 5-person households.

It is difficult to measure the increase in population of Aupaluk because the community was not formally established until 1977.

6.0 POLITICAL ORGANIZATION

Administrative bodies in the community comprise local government and the community council, which manage municipal services, and the Nunavik Corporation of Aupaluk, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement.

7.0 ECONOMY

7.1 Major activities

In Aupaluk between 1973-78, 33.1% of the harvest was derived from marine mammals and 41.9% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Aupaluk consists of hunting, fishing and trapping. These activities not only provide money but also food for the community. There is a potential wage earning work force of 20, representing 31% of the total population. In March 1980, 80% of the eligible Inuit labor force held full- or part-time employment.

Air Inuit and the Co-op (part-time) are the only commercial employers. The local government and community council, the Kativik School Board, the Inuit Landholding Corporation and the Department of Public Works and Supply are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

8.0 RENEWABLE RESOURCES

Initial harvest collection data show that over 20,000 kg (44,000 lbs) of edible meat are derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

The community lies within the minerally productive Labrador Trough. This through is well known for its high-grade iron and copper ore deposits.

10.0 PRICES AND INCOME

Total income for the community of Aupaluk in the year 1976 is unknown, due to a lack of information. The breakdown of earnings from hunting, fishing and trapping, arts and crafts, self-employment, commercial employment and public employment is also unknown.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located 4 km (2.5 m) wouthwest of the settlement near the mouth of the Voltz River. In the winter water is collected from a lake located 3.2 km (2 m) east of the community.

Water is collected and delivered by one 600 gallon muskeg-tracked vehicle. Residents store water in 45-90 gallon tanks. No homes have internal plumbing.

The approximate annual use of water by Inuit is 50,000 gallons, representing a per capita use of 2 gallons per day.

11.2 Sanitation

Since there is no sewage system in Aupaluk, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dumpsite.

Garbage is picked up on a daily basis with home collection of sewage and solid wastes. The dump site is located 1.2 km (.75 m) east of the community. The dumpsite uses open incineration and there are no landfill operations. At present, a D-5 bulldozer pulling a box serves as the garbage pickup vehicle.

12.0 TRANSPORTATION

12.1 Air facilities

Aupaluk is the regional administrative centre for the communities of the Ungava Bay coast. The regional airline, Air Inuit, offers flights to the community 3 times a week. Nordair provides 737 jet service between Kuujjuaq and Montreal 4 to 6 times per week.

12.2 Road

Local modes of transportation include snowmobile, canoe, speedboats and 4-wheel drive hehicles. There are .24 km (0.15 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services including one nursing station staffed by two nurses and an Inuit nurse's aide.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by the Quebec Police Force stationed in Kuujjuaq.

14.4 Religion

Religious services are offered by the Anglican Mission.

15.0 EDUCATION

Primary education is offered by the Kativik School Board.
Total: 45 students.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: AUPALUK Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro-Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: None

4.4 total: 220 123

5.0 Peak load (kWh): 90

5.1 Peak load date: 82-01-13

6.0 Tarification:

D3	23.0¢ fixed charge per day, plus 2.7¢ per kwh for the first 20 kwh per day. 15.0¢ per kwh for the remaining consumption.
G1	Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.
19	Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

143 400 litres

9.0 Annual heating oil consumption

153 077 litres

10.0 Total diesel fuel and heating oil consumption

296 477 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.5375¢/litre

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	90	87-88	Not known	280
82-83	±	120	88-89	Not available	
83-84	±	140	89-90	±	±
84-85	±	180	90-91	±	±
85-86	±	250	91-92	±	±
86-87	±	265			

15.0 Inventory of building stock

1. Warehouses: (1)
2. Garage: (1)
3. Office building: (1)
4. Firehall: none
5. Laundry: none

16.0 Diesel installations

42083	kW	No of Units
Perkins 6.354 series C264790901	50	4
Perkins 6.354 series C264790902	50	3
Caterpillar 3306-PC - 66D44151	150	2
Caterpillar 3306-PC - series 66D44278	150	1

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 65
Total no. of families: 11
No. of houses occupied: 11
Average no. of families per house: NO DATA
Maximum: ND Minimum: ND
Average no. of occupants per house: ND
Maximum: ND Minimum: ND
No. of houses habitable: 2

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	11			2				
B) Ideal Community Distribution of houses				2	2	4	1	
C) Immediate Community needs for housing					2	4	1	

Aupaluk

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS — **STUDIES AND FEASIBILITY**

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

Studies: Proposed energy efficiency projects

Projects: Improvements to installations

Feasibility

High 3,4,5

Low 1,2

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:

Projects:

Feasibility

High 2,4

Low 1,4,5

Aupaluk

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,3,5,8
Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: POVUNGNITUK **Ecoregion**: NOUVEAU QUEBEC

1.0 LOCATION

60° 02' N
77° 16' W

The community of Povungnituk is located on the eastern shore of Hudson bay at the mouth of the Povungnituk River.

2.0 TOPOGRAPHY

The community is located in the barren ground of Northern Quebec. The inland area east of the community is also flat with elevations rising to 169 m (550 ft). Further towards the interior the region remains flat with extensive wetlands and lakes.

3.0 CLIMATE

The climate of Povungnituk is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 7°C with a maximum of 13°C and a minium of 4°C. The average January temperature is -23°C with a maximum of -21°C and a minimum of -29°C.

Povungnituk is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name Povungnituk means "A place where you smell bad meat". The village was named by the geologist Albert Peter Low, who in 1898 explored the region on behalf of the Geological Survey of Canada.

5.0 DEMOGRAPHY

The population of Povungnituk consists of 752 individuals, 745 of whom are Inuit. The community comprises 130 families, 128 of which are Inuit.

The Inuit population is composed of 369 females and 383 males. It is divided into the following age groups: 355 individuals of 15 years of age or less form the first group and represent 47% of the total Inuit population; 156 people aged from 16 to 25 years form the second group, which represents 21% of the total Inuit population and finally, the third group is made up of 241 individuals aged 26 to 85 years who account for 32% of the total Inuit population.

The average household size is 5.5; the largest unit is a 12-person household and the smallest ones are the one-person households.

Over the last few years the population of Povungnituk has increased from 586 to 745 people. Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Povungnituk is linked by airline services to southern Quebec via Kuujjuaraapik, the regional administrative centre for the communities of the eastern Hudson Bay coast.

Administrative bodies in the community comprise the community council, which manages municipal services, and a Caisse Populaire bank.

7.0 ECONOMY

7.1 Major activities

Hunting, fishing. Data not available because of lack of response in Povungnituk.

7.2 Employment

One of the main sources of income for the Inuit of Povungnituk consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community.

There is a potential wage earning work force of 235, representing 32% of the total population. In March 1980, 41% of the eligible Inuit labor force held full- or part-time employment.

The Hudson's Bay Company, the Cooperative and Austin Airways are the principal commercial employers. The local government and community council, the Commission Scolaire du Nouveau Quebec, the Department of Social Affairs and the Department of Public Works and Supply are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

The Inuit of Povungnituk obtain their harvest from the offshore islands, coastal and intervening waters in the region of the Povungnituk Bay and River, Thompson Harbour, Neakongut and Kogaluk Bays.

9.0 NON RENEWABLE RESOURCES

Uranium.

10.0 PRICES AND INCOME

Total income for the community of Puvungnituk in the year 1976 was $2,412,608.00 representing a per capita revenue of $3,278.00 or $19,666.00 per family.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source in the Povungnituk River is located in the west end of the settlement.

In winter water is collected and delivered by one 500 gallon muskeg-tracked vehicle and in summer by two 1000 gallon water tank trucks. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 750,000 gallons, representing a per capita use of 2.7 gallons per day.

11.2 Sanitation

Since there is no sewage system in Povungnituk, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Garbage is picked up daily, with home collection of sewage and solid wastes. The dump site is located 1.6 km (1 m) north of the community. The dump site uses incineration and there are no landfill operations. Solid waste is collected by 2 garbage trucks in summer and by one muskeg-tracked truck in winter.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airline, Austin Airways, offers flights to the community 5 times per week. Nordair provides 737 jet service between Montreal and Kuujjuaraapik 4 to 6 times per week.

12.2 Road

Local modes of transportation include snowmobile, canoe, speedboat and 4-wheel drive vehicles. There are 2.8 km (1.5 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik Satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication. Canada Post provides regular mail service.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services including a nursing station staffed by two nurses and an Inuit nurse's aide.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by a special Inuk constable of the Quebec Police Force.

14.4 Religion

Religious services are provided by the Anglican mission.

15.0 EDUCATION

Primary education is offered by the Commission Scolaire du Nouveau Quebec.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: POVUNGNITUK Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: None

4.4 total: 1 683 580 Subscriptions: 196 (82-03-01)

5.0 Peak load (kWh)

5.1 Peak load date: 82-02-02

6.0 Tarification: D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day
15.0¢ per kwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

677 000 litres

9.0 Annual heating oil consumption

1 335 000 litres

10.0 Total diesel fuel and heating oil consumption

2 012 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.4783¢/litres (82-06-09)

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	365	87-88	Not known	655
82-83	±	385	88-89	Not available	
83-84	±	470	89-90	±	±
84-85	±	540	90-91	±	±
85-86	±	590	91-92	±	±
86-87	±	620			

15.0 Inventory of building stock

1. Warehouses: 3 municipal
   3 COOP
   3 HBCo
2. Garage: 1 municipal

3. Office building: (1)

4. Firehall: none

5. Laundry: (1)

16.0 Diesel installations

42071	kW	No of Units
Caterpillar D-379 series 68B-3352	400	3
Caterpillar D-398 series 66B-5708	600	4
Caterpillar D-343 series 62B-17900	250	2

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 741
Total no. of families: 144
No. of houses occupied: 122
Average no. of families per house: 1
Maximum: 3 Minimum: 1
Average no. of occupants per house: 6
Maximum: 12 Minimum: 1
No. of houses habitable: 92

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	19	11		92				
B) Ideal Community Distribution of houses				63	31	34	9	18-22
C) Immediate Community needs for housing					17	19	9	5

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Proposed energy efficiency projects
2. Rate structure change	Projects: Improvements to installations
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High 3,4,5
5. Time of use measures	Low 1,2

REPLACEMENT OPTIONS	
1. Connection to main grid	
	Studies:
2. Mini hydro	Projects:
3. Wind/diesel systems	
4. Wood biomass	
	Feasibility
5. Peat biomass	High 2,3
	Low 1,4,5

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY	
1. Building energy audit	Studies: Projects:	
2. Insulation retrofit		
3. Air envelope retrofit		
4. Window/door retrofit		
5. Super-efficient norms for new construction		
6. Set-back thermostat		
7. Hot water heating conservation measures		
8. Higher efficiency furnace retrofit	Feasibility	
9. Heat pumps	High	1,2,3,4,5,6,7,8,10,11
10. Waste heat recovery	Low	9
11. Energy conservation education		

REPLACEMNT OPTIONS		
1. Connection to main grid		
2. Rate structure change for oil based electrical heating	Studies: Projects:	
3. Cogeneration		
4. District heating		
5. Wind systems		
6. Wood systems		
7. Peat systems	Feasibility	
8. Active solar	High	2,3,5,8
	Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: INUKJUAK   Ecoregion: NOUVEAU QUEBEC

1.0 LOCATION

58° 27' N
78° 06' W

The community of Inukjuak, known as Port Harrison, is located at the mouth of Inuksuak River on the east of Hudson Bay. Inukjuak is situated on flat rolling, sandy terrain.

2.0 TOPOGRAPHY

The community is located in the barren ground of Northern Quebec. The inland area east of the community is flat with extensive lakes and wetlands. Elevations in the interior vary from 169 m (550 ft) to 200 m (650 ft).

3.0 CLIMATE

The climate of Inukjuak is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 and 1960 shows an average July temperature of 10°C with a maximum of 13°C and a minimum of 4°C. The average January temperature is -23°C with a maximum of -21°C and a minimum of -29°C.

Inukjuak is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's inuktitut name Inukjuak means "Giant Person". The settlement was given its English name by the geologist A.P. Low, who in 1898 explored the Port Harrison region on behalf of the Geological Survey of Canada.

The community is located just east of the Hopewell Islands, a series of heavily-used, resource-rich offshore islands.

5.0 DEMOGRAPHY

The population of Inukjuak consists of 650 Inuit. There are 99 Inuit familes.

The Inuit population is composed of 293 females and 357 males. It is divided into the following age groups: 278 individuals of 15 years of age or less form the first group and represent 43% of the total Inuit population; 139 people aged from 16 to 25 years from the second group, which represents 21% of the total Inuit population and finally, the third group is made up of 233 individuals aged 26 to 85 years, who account for 36% of the total Inuit population.

The average household size is 7; the largest unit is a 14-person household and the smallest ones are the one-person households.

Over the last ten years the population of Inukjuak has increased from 479 to 650 people. Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Inukjuak is linked by airline services in southern Quebec via Kuujjuaraapik, the regional administrative centre for the communities of the Eastern Hudson Bay coast.

Administrative bodies in the community comprise local government and the community council, which manage the municipal service, and the Pituvik Corporation, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement.

7.0 ECONOMY

7.1 Major activities

In Inukjuak between 1973-78, 32% of the harvest was derived from marine mammals, and 68% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Inukjuak consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage earning work force of 218, representing 35% of the total population. In March 1980, 50% of the eligible Inuit labor force held full- or part-time employment.

The Hudson's Bay Company, the Cooperative and Austin Airways are the principal commercial employers. The local government and community council, the Kativik School Board, the Inuit Landholding Corporation and the Department of Public Works and Supply are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Initial harvest data shows that over 250,000 kg (560,000 lbs) of edible meat is derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

The coastal area in the Inukjuak region has recently become of interest for uranium exploration; no potential finds have been announced.

10.0 PRICES AND INCOME

Total income for the community of Inukjuak in the year 1976 was $2,078,952.00 representing a per capita revenue of $3,364.00 or $20,115.00 per family. The revenue was from hunting, fishing and trapping.

11.0 INFRASTRUCTURE

11.1 Water

In winter water is collected and delivered by one 600 gallon muskeg-tracked vehicle and in summer by one 1000 gallon water tank truck. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 493,565 gallons, representing a per capita use of 2 gallons per day.

11.2 Sanitation

Since there is no sewage system in Inukjuak, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Garbage is picked up daily, with home collection of sewage and solid wastes. The dump site is located 4 km (2.5 m) north of the community. The dump site was open incineration and there are no landfill operations. In summer, solid waste is collected by one garbage and one sewage vehicle, and in winter 2 muskeg-tracked vehicles are used.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airline, Austin Airways, offers flights to the community 5 times per week. Nordair provides 737 jet service between Montreal and Kuujjuaraapik 4 to 6 times per week.

12.2 Road

Local modes of transportation include snowmobile, canoe, speedboat and 4-wheel drive vehicles. There are 3.7 km (2.3 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik Satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication. Canada Post provides regular postal service. There is a local TV station (video cassettes), with a possibility of CBC service in the near future.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services including one nursing station staffed by two nurses and an Inuit nurse's aide.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by a special Inuk constable of the Quebec Police Force.

14.4 Religion

Religious services are offered by the Anglican mission.

15.0 EDUCATION

Primary education is offered by the Kativik School Board.
Total: 234 students.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: INUKJUAK   Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: None

4.4 total: 1 978 395   Subscriptions: 170 (82-03-01)

5.0 Peak load (kWh): 430

5.1 Peak load date: 82-02-03

6.0 Tarification: D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per kwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

767 000 litres

9.0 Annual heating oil consumption

1 274 000 litres

10.0 Total diesel fuel and heating oil consumption

2 041 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.4783¢/litre (82-06-09)

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	430	87-88	Not known	685
82-83	±	450	88-89	Not available	
83-84	±	500	89-90	±	±
84-85	±	570	90-91	±	±
85-86	±	620	91-92	±	±
86-87	±	650			

15.0 Inventory of building stock

1. Warehouses: 2 municipal
   2 COOP
   2 HBCO

2. Garage: 2 municipal

3. Office building: (1)

4. Firehall: none

5. Laundry: (1)

16.0 Diesel installations

42070	kW	No of Units
Caterpillar D-343 series 62B-13326	250	3
Caterpillar D-379 series 68B-3673	400	4
Caterpillar D-398 series 66-B-6202	600	1

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 618
Total no. of families: 119
No. of houses occupied: 102
Average no. of families per house: 1
Maximum: 2 Minimum: 1
Average no. of occupants per house: 6
Maximum: 14 Minimum: 1
No. of houses habitable: 67

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	24	11		60	7			
B) Ideal Community Distribution of houses			2	49	25	35	8	16
C) Immediate Community needs for housing					17	25	8	4

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Proposed energy efficiency projects Projects: Improvements to installations, possibly including recovery of heat from the power station. Integrated solar system for heating water and homes: 6 months of the year. Public Works Canada. Feasibility High 3,4,5 Low 1,2
REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Projects: Feasibility High 2,3 Low 1,4,5

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS — STUDIES AND FEASIBILITY

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies:
Projects:

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,3,5,8
Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: KANGIQSUJUAQ Ecoregion: NOUVEAU QUEBEC

1.0 LOCATION

61° 36' N
71° 57' W

The community of Kangiqsujuaq, known as Wakeham Bay or Maricourt, is located on the eastern shore of Wakeham Bay. The settelement is nestled between two steeply sloping mounting rnages and is situated 12 km (7 m) south of the mouth of Wakeham Bay.

2.0 TOPOGRAPHY

The community is located in the mountainous region of Northern Quebec. The inland area of Wkeham Bay is also mountainous, with elevations rising to 550 m (1787 ft).

3.0 CLIMATE

The climate of Kangiqsujuaq is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 7°C with a maximum of 10°C and a minimum of 4°C. The average January temperature is -20°C with a maximum of -10°C and a minimum of -26°C.

Kangiqsujuaq is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name Kangiqsujuaq means "Big Bay". The settlement and bay derive their English name, Wakeham Bay, from Captain William Wakeham, who in 1897 surveyed the Hudson Strait region on behalf of the Canadian government.

5.0 DEMOGRAPHY

In 1980, the population of Kangiqsujuaq consisted of 279 Inuit, with 56 Inuit families. No data is available on the non-Inuit population.

The Inuit population is composed of 144 females and 135 males. It is divided into the following age groups: 137 individuals of 15 years of age or less form the first group and represent 49% of the total Inuit population; 42 people aged from 16 to 25 years form the second group, which represents 15% of the total Inuit population and finally, the third group is made up of 100 individuals aged 26 to 85 years, who account for 36% of the total Inuit population.

The average household size is 7.5; the largest unit is a 12-person household and the smallest one is the two-person household.

Over the last ten years the population of Kangiqsujuaq has increased from 192 to 279 people. Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Kangiqsujuaq is linked by airline services to southern Quebec via Kuujjuaq, the regional administrative centre for the communities of the Ungava Bay coast.

Administrative bodies in the community are comprised of local government and the community council, which manage municipal service, and the Nunatulik Corporation of Kangiqsujuaq, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement.

7.0 ECONOMY

7.1 Major activities

In Kangiqsujuaq between 1973-78, 72% of the harvest was derived from marine mammals, 28% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Kangiqsujuaq consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage earning work force of 96, representing 35% of the total population. In March 2980, 49% of the eligible Inuit labor force held full- or part-time employment.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Initial harvest collection data shows that over 150,000 kg (330,000 lbs) of edible meat are derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

Nickel.

10.0 PRICES AND INCOME

Total income for the community of Kangiqsujuaq in the year 1976 was $631,400.00 representing a per capita revenue of $2,296.00 or $3,655.00 per family.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located 1.2 km (.75 m) east of the settlement. Water is collected and delivered by one 600 gallon and one 400 gallon muskeg-tracked vehicle and one 1000 gallon water tank truck. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 375,000 gallons, representing a per capita use of 3.5 gallons per day.

11.2 Sanitation

Since there is no sewage system in Kangiqsujuaq, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dumpsite.

Garbage is picked up daily, with home collection of sewage and solid wastes. The dump site is located 1 km (.6 m) southwest of the community. The method used at the dump site is open incineration and there are no land-fill operations.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airline, Air Inuit, offers flights to the community 3 times per week. Nordair provides 737 jet service between Kuujjuaq and Montreal 4 to 6 times per week.

12.2 Road

Local modes of transportation include snowmobile, canoe, speedboats and 4-wheel drive vehicles. There are 2 km (1.2 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication. Canada Post provides regular mail service.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services including one nursing station staffed by two nurses and an Inuit nurse's aide. There is also a Quebec Police Force station in Kangiqsujuaq.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by a special Inuk constable of the Quebec Police Force.

14.4 Religion

Religious services are offered by the Roman Catholic and the Anglican missions.

15.0 EDUCATION

Primary education is offered by the Kativik School Board. There are 4 schools.
Total: 105 students.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: KANGIQSUJUIAK   Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: None

4.4 total: 603 950   Subscriptions: 73 (82-03-01)

5.0 Peak load (kWh): 150

5.1 Peak load date: 82-01-04

6.0 Tarification: D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per kwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building.

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

336 000 litres

9.0 Annual heating oil consumption

536 000 litres

10.0 Total diesel fuel and heating oil consumption

872 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.4783¢/litre

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	150	87-88	Not known	245
82-83	±	180	88-89	Not available	
83-84	±	190	89-90	±	±
84-85	±	210	90-91	±	±
85-86	±	220	91-92	±	±
86-87	±	230			

15.0 Inventory of building stock

1. Warehouses: 3 municipal
   3 COOP
   4 HBCo
2. Garage: 1 municipal
3. Office building: (2)
4. Firehall: none
5. Laundry: (1)

16.0 Diesel installations

42087	kW	No of Units
Caterpillar 3406-PCTA series 90U8873	210	1
Caterpillar 3406-PCTA series 90U7102	210	2

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 260
Total no. of families: 55
No. of houses occupied: 40
Average no. of families per house: 1
Maximum: 2 Minimum: 1
Average no. of occupants per house: 6
Maximum: 10 Minimum: 2
No. of houses habitable: 39

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses		1		38		1		
B) Ideal Community Distribution of houses			1	16	12	15	2	6
C) Immediate Community needs for housing					1	6	1	1-2

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects
Projects: Improvements to installations

Feasibility

High 3,4,5

Low 1,2

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:
Projects:

Feasibility
High 2,3

Low 1,4,5

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

STUDIES AND FEASIBILITY

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1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies:
Projects:

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

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1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,3,5,8
Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: IVUJIVIK **Ecoregion**: NOUVEAU QUEBEC

1.0 LOCATION

62° 25' N
77° 54' W

The community of Ivujivik is located on the western shore of a small inlet situated on the northwestern corner of the province of Quebec. The settlement is nestled between steeply sloping mountains and is situated 26 km (16 m) south of Rigges Islands, two large offshore islands which have approximately 1 million pairs of breeding thick-billed murres, forming the largest colony in the Canadian Arctic.

2.0 TOPOGRAPHY

The community is located in the barren ground of Northern Quebec. The inland area south and east of the community is mountainous with elevations rising to 569 m (1850 ft).

3.0 CLIMATE

The climate of Ivujivik is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 7°C with a maximum of 10°C and a minimum of 4°C. The average Januray temperature is -23°C with a maximum of -21°C and a minimum of -29°C.

Ivujivik is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name Ivujivik means "A place where the ice moves". The settlement derives its English name from explorer A.P. Low, who in 1898-99 explored the Ivujivik - Cape Wolstenholme area on behalf of the Geological Survey of Canada.

5.0 DEMOGRAPHY

In 1980, the population of Ivujivik consisted of 184 individuals, 176 of them Inuit. The community comprise 33 families, all of them Inuit.

The Inuit population is composed of 87 females and 89 males. It is divided into the following age groups: 87 individuals of 15 years of age or less form the first group and represent 49% of the total Inuit population; 36 people aged from 16 to 25 years form the second group,which represents 20% of the total Inuit population and finally, the third group is made up of 53 individuals aged 26 to 85 years, who account for 31% of the total Inuit population.

The average household size is 7; the largest unit is an 11-person household and the smallest is the one-person household.

Over the last ten years, the population of Ivujivik has increased from 122 to 184 people. Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Ivujivik is linked by airline services to southern Quebec via Kuujjuaraapik, the regional administrative centre for the communities of the eastern Hudson Bay coast.

Administrative bodies in the community comprise local government and the community council, which manage municipal services.

7.0 ECONOMY

7.1 Major activities

Hunting, fishing. Data not available because of lack of response in Ivujivik.

7.2 Employment

One of the main sources of income for the Inuit of Ivujivik consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage earning work force of 64, representing 36% of the total population. In March 1980, 56% of the eligible Inuit labor force held full- or part-time employment.

The Hudson's Bay Company, the Cooperative and Austin Airways are the principal commercial employers. The local government and community council, the Commission scolaire du Nouveau Quebec and the Department of Public Works and Supply are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Much of the harvest is derived from the marine resources of the offshore region, including Mansel, Digges, Salisbury and Nottingham Islands.

9.0 NON RENEWABLE RESOURCES

Nickel.

10.0 PRICES AND INCOME

Total income for the community of Ivujivik in the year 1976 was $517,440.00 representing a per capita revenue of $2,940.00 or $17,640.00 per family. The breakdown of this total revenue from hunting, fishing and trapping, arts and crafts, self-employment, commercial employement.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located in 2 lakes approximately 3.2 km (2 m) southweat of the settlement. Water is collected and delivered by one 600 gallon muskeg-tracked vehicle. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 94,000 gallons, representing a per capita use of 1.5 gallons per day.

11.2 Sanitation

Since there is no sewage system in Ivujivik, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dumpsite.

Garbage is picked up daily, with home collection of sewage and solid wastes. The dump site is located 1.6 km (1 m) southeast of the community. The method used at the dump site is open incineration and there are no landfill operations. Solid waste is collected by a muskeg-tracked vehicle.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airline, Austin Airways, offers flights to the community 3 times per week. Nordair provides 737 jet service between Montreal and Kuujjuaraapik 4 to 6 times per week.

12.2 Road

Local modes of transportation include snowmobile, canoe, speedboat and 4-wheel drive vehicles. There are .8 km (.5 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication. Canada Post provides regular mail service.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services including one nursing station staffed by a nurse and an Inuit nurse's aide.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by the Quebec Police Force stationed in Kuujjuaraapik.

14.4 Religion

Religious services are offered by the Anglican mission.

15.0 EDUCATION

Primary education is offered by the Commission scolaire du Nouveau-Quebec. There are 2 schools.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: IVUJIVIK   Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: none

4.4 total: 392 366   Subscriptions: 58 (82-03-01)

5.0 Peak load (kWh): 150

5.1 Peak load date: 82-01-14

6.0 Tarification:

D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per kwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

211 000 litres

9.0 Annual heating oil consumption

324 000 litres

10.0 Total diesel fuel and heating oil consumption

535 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.4783¢/litre (82-06-09)

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	150	88-89	Not available	
82-83	±	160	89-90	±	±
83-84	±	180	90-91	±	±
84-85	±	195	91-92	±	±
85-86	±	205			
86-87	±	215			
87-88	±	225			

15.0 Inventory of building stock

1. Warehouses: 2 municipal
   3 COOP
2. Garage: 1 municipal
3. Office building: (1)
4. Firehall: none
5. Laundry: (1)

16.0 Diesel installations

42073	kW	No of Units
Caterpillar D-334 series 92B-2211	185	1
Caterpillar D-334 series 92B-3173	175	2

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 176
Total no. of families: 33
No. of houses occupied: 27
Average no. of families per house: 1
Maximum: 2 Minimum: 1
Average no. of occupants per house: 7
Maximum: 11 Minimum: 1
No. of houses habitable: 21

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	5	1		19	2			
B) Ideal Community Distribution of houses				9	8	7	4	2-3
C) Immediate Community needs for housing					2	3	2	1

Ivujivik

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Proposed, energy efficiency projects Projects: Improvements to installations possibly including recovery of heat from the power station. Feasibility High 3,4,5 Low 1,2

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Projects: Feasibility High 2,3 Low 1,4,5

Ivujivik

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS — STUDIES AND FEASIBILITY

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies:
Projects:

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,3,5,8
Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: SALLUIT **Ecoregion**: NOUVEAU QUEBEC

1.0 LOCATION

62° 12' N
78° 38' W

The community of Salluit, known as Sugluk or Saglouc, is located on the eastern shore of Sugluk Inlet. The settlement is nestled between two steeply sloping mountain ranges and is situated 13 km (3 m) south of Hudson Strait.

2.0 TOPOGRAPHY

The community is located in the barren ground of Northern Quebec. The inland area south of the community is also mountainous with elevations rising to 569 m (1850 ft).

3.0 CLIMATE

The climate of Salluit is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 7°C with a maximum of 10°C and a minimum of 4°C. The average January temperature is -23°C with a maximum of -21°C and a minimum of -26°C.

Salluit is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name Salluit means "Thin Ones". The Salluit region was initially explored between 1897 and 1899 by Captain William Wakeham and Albert Peter Low on behalf of the Geological Survey of Canada.

The community is located approximately 64 km (40 m) west of Deception Bay, the harbour and loading site for the Asbestos Mine, situated 64 km (40 m) south at Purtuniq, known as Asbestos Hill.

5.0 DEMOGRAPHY

In 1980, the population of Salluit consisted of 518 Inuit, with 89 Inuit families. No data is available on the non-Inuit population.

The Inuit population is composed of 251 females and 267 males. It is divided into the following age groups: 258 individuals of 15 years of age or less form the first group and represent 50% of the total Inuit population; 110 people aged from 16 to 25 years from the second group, which represents 21% of the total Inuit population and finally, the third group is made up of 150 individuals aged 26 to 85 years, who account for 29% of the total Unuit population.

The average household size is 5; the largest unit is a 16-person household and the smallest one is the one-person household.

Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Salluit is linked by airline services to southern Quebec via two regional administrative centers, Kuujjuaq and Kuujjuaraapik, serving the Ungava Bay and Hudson Bay coastal communities respectively.

Administrative bodies in the community are comprised of local government and the community council, which manage municipal service and the Salluit Qarqalik Corporation, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreements.

7.0 ECONOMY

7.1 Major activities

In Salluit between 1975-78, 61% of the harvest was derived from marine mammals and 39% from fish, caribou, small game and waterfow.

7.2 Employment

One of the main sources of income for the Inuit of Salluit consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage earning work force of 169, representing 31% of the total population. In March 1980, 49% of the eligible Inuit labor force held full- or part-time employment.

The Hudson's Bay Company, the Cooperative, Air Inuit and Austin Airways are the principal commercial employers. The local government and community council, the Kativik School Board, the Inuit Landholding Corporation and the Department of Public works and Supply are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Initial harvest collection data shows that over 128,000 kg (282,000 lbs) of edible meat are derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

Nickel.

10.0 PRICES AND INCOME

Total income for the community of Salluit in the year 1976 was $1,297,016.00 representing a per capita revenue of $2,438.00 or $14,539.00 per family.

11.0 INFRASTRUCTURE

11.1 Water

In summer the municipal water supply source is located in a river which runs within 100 m (32 ft) of the settlement. In the winter water is collected along the same river 3.2 km (2 m) east of the community. Water is collected and delivered by one 600 gallon muskeg-tracked vehicle and one Nodwell-tracked vehicle and in the summer by one 1000 gallon water tank truck. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 410,000 gallons, representing a per capita use of 2 gallons per day.

11.2 Sanitation

Since there is no sewage system in Salluit, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Garbage is picked up daily, with home collection of sewage and solid wastes. The dump site is located 200 m (600 ft) east of the community. The method used at the dump site is open incineration and there are no landfill operations. Solid waste is collected by a garbage truck with compactor and a muskeg-tracked vehicle.

12.0 TRANSPORTATION

12.1 Air facilities

Two regional airlines, Air Inuit and Austin Airways, each offer flights to the community 2 times a week.

Nordair provides 737 jet service between Kuujjuaraapik and Kuujjuaq and Montreal 4 to 6 times per week.

12.2 Road

There are 2.3 km (1.4 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Telesat Canada via an Anik satellite telephone connection through Ottawa. Bell Telephone provides local telephone services. The local FM station is also used by the community as a means of communication. Canada Post provides regular mail service. Pre-programmed television (on video tapes) is available.

14.0 SOCIAL SERVICES

14.1 Medical

The Health and Welfare Canada provides health services including a nursing station serviced by 2 nurses and an Inuit nurse's aide.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by a special Inuk constable of the Quebec Police Force.

14.4 Religion

Religious services are offered by the Anglican mission.

15.0 EDUCATION

Primary education is offered by the Kativik School Board.
Total: 199 students.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: SALLUIT   Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: none

4.4 total: 653 456   Subscriptions: 122 (82-03-01)

5.0 Peak load (kWh): 265

5.1 Peak load date: 82-02-08

6.0 Tarification: D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per kwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

405 000 litres

9.0 Annual heating oil consumption

802 000 litres

10.0 Total diesel fuel and heating oil consumption

1 207 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.4793¢/litre

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	265	87-88	Not known	495
82-83	±	345	88-89	Not available	
83-84	±	360	89-90	±	±
84-85	±	405	90-91	±	±
85-86	±	450	91-92	±	±
86-87	±	470			

15.0 Inventory of building stock

1. Warehouses: 4 municipal
   2 COOP
   6 HBCO
2. Garage: 2 municipal

3. Office building: (1)

4. Firehall: none

5. Laundry: none

16.0 Diesel installations

42083	kW	No of Units
Caterpillar D-343 series 62B-10963	250	1
Caterpillar D-343 series 62B-11498	250	2

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 537
Total no. of families: 96
No. of houses occupied: 69
Average no. of families per house: 1
Maximum: 3 Minimum: 1
Average no. of occupants per house: 7
Maximum: 16 Minimum: 1
No. of houses habitable: 54

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	12	3		49	5			
B) Ideal Community Distribution of houses				34	18	17	14	15-18
C) Immediate Community needs for housing					13	12	10	4

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Proposed energy efficiency projects
2. Rate structure change	Projects: Improvements to installations
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High 3,4,5
5. Time of use measures	Low 1,2

REPLACEMENT OPTIONS	
1. Connection to main grid	
	Studies:
2. Mini hydro	Projects:
3. Wind/diesel systems	
4. Wood biomass	
	Feasibility
5. Peat biomass	High 2,3
	Low 1,4,5

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY	
1. Building energy audit	**Studies:** **Projects:**	
2. Insulation retrofit		
3. Air envelope retrofit		
4. Window/door retrofit		
5. Super-efficient norms for new construction		
6. Set-back thermostat		
7. Hot water heating conservation measures		
8. Higher efficiency furnace retrofit	**Feasibility**	
	High	1,2,3,4,5,6,7,8,10,11
9. Heat pumps		
	Low	9
10. Waste heat recovery		
11. Energy conservation education		
REPLACEMNT OPTIONS		
1. Connection to main grid		
	Studies: **Projects:**	
2. Rate structure change for oil based electrical heating		
3. Cogeneration		
4. District heating		
5. Wind systems		
6. Wood systems		
	Feasibility	
7. Peat systems		
	High	2,3,5,8
8. Active solar		
	Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: KANGIQSUALUJJUAQ   Ecoregion: NOUVEAU QUEBEC

1.0 LOCATION

58° 41' N
65° 56' W

The settlement is situated along the side of a large granite outcrop, approximately 26 km (16 m) south of Ungava Bay.

2.0 TOPOGRAPHY

The community is located at the northern extent of the treeline, in the taiga region of Northern Quebec. The inland area rises to 614 m (200 ft), forming the foot hills of the ice-capped Torngat Mountains.

3.0 CLIMATE

The climate of Kangiqsualujjuaq is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 13°C with a maximum of 16°C and a minimum of 7°C. The average January temperature is 023°C with a maximum of -18°C and a minimum of -26°C.

Kangiqsualujjuaq is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community of Kangiqsualujjuaq, also known as George River or Port Nouveau Quebec, is located on a small bay on the eastern shore of George River.

The community's Inuktitut name Kangiqsualujjuaq means "Large Cove". The settlement and river derive their English name, George River, from the Hudson Bay Company traders who frequented the region in the 1830s.

The community is located approximately 64 km (40 m) downstream from Helen's Falls, a picturesque and productive Inuit salmon and char outfitting camp.

5.0 DEMOGRAPHY

The population of Kangiqsualujjuaq consists of 333 individuals, 321 of whom are Inuit. The community comprises of 58 families, 57 being Inuit.

The Inuit population is composed of 153 females and 173 males. It is divided into the following age groups: 149 individuals of 15 years of age or less form the first group and represent 46% of the total Inuit population; 71 people aged from 16 to 25 years form the second group, which represents 22% of the total Inuit population and finally, the third group is made up of 104 individuals aged 26 to 85 years, who account for 32% of the total Inuit population.

The average household size is 7; the largest unit is a 15-person household and the smallest one is a 3-person household.

Over the last ten years the population of Kangiqsualujjuaq has increased from 244 to 333 people. Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Kangiqsualujjuaq is linked by airline services to southern Quebec via Kuujjuaq, the regional administrative centre for the communities of the Ungava Bay coast.

Administrative bodies in the community comprise local government and the community council, which manage municipal services, and the Qiniqtik Corporation, also known as the Inuit Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement.

7.0 ECONOMY

7.1 Major activities

In Kangiqsualujjuaq between 1973-78, 17% of the harvest was derived from marine mammals and 83% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Kangiqsualujjuaq consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage earning work force of 108, representing 33% of the total population. In March 1980, 55% of the eligible Inuit labor force held full- or part-time employment.

The Cooperative, Air Inuit and a number of outfitting camps are the principal commercial employers. The local government and community council, the Kativik School Board, the Inuit Landholding Corporation and the Department of Public Works and Supply are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Initial harvest collection data shows that over 150,000 kg (340 000 lbs) of edible meat are derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

None.

10.0 PRICES AND INCOME

Total income for the community of Kangiqsualujjuaq in the year 1976 was $687,667.00 representing a per capita revenue of $2,129.00 or $13,144.00 per family.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located 1.6 km (1 m) northeast of the settlement. Water is collected and delivered by one 250 gallon muskeg-tracked vehicle in winter and two 1000 gallon water tank trucks in summer. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 480,000 gallons, representing a per capita use of 4 gallons per day.

11.2 Sanitation

Since there is no sewage system in Kangiqsualujjuaq, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Grey waste water from kitchen and bathroom sinks is disposed of directly into the ground surrounding the houses.

Garbage is collected on a daily basis by trucks, one of which is a compactor. The dump site is located .4 km (.25 m) northwest of the community. The methods used at the dump site are open incineration and landfill operations.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airline, Air Inuit, offers flights to the community twice a week. Nordair provides 737 jet service between Kuujjuaq and Montreal 4 to 6 times per week.

12.2 Road

Local modes of transportation include snowmobile, canoe, peter-head boats, speedboats and 4-wheel drive vehicles. There are 2.4 km (1.5 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Communication services to the south are provided by Telesat Canada via a direct ASnik satellite telephone connection through Ottawa, to all points outside the community. Canada Post provides regular mail services. Local forms of communication include a community FM station and interhome telephone services offered by Bell Telephone.

14.0 SOCIAL SERVICES

14.1 Medical

The provincial Department of Social Affairs provides health services including one nursing station staffed by two nurses and an Inuit nurse's aide.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by a special Inuk constable of the Quebec Police Force.

14.4 Religion

Religious services are offered by the Anglican Mission.

15.0 EDUCATION

Primary education is offered by the Kativik School Board.

16.0 BASIC NEEDS

New upgraded housing to meet immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: KANGIQSUALUJJUAQ Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: G1 General without heating

4.3 industrial: None

4.4 total: 915 755 Subscriptions: 87 (82-03-01)

5.0 Peak load (kWh): 200

5.1 Peak load date: 82-02-04

6.0 Tarification:

D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per kwh for the remaining consumption.

G1 Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building.

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

351 000 litres

9.0 Annual heating oil consumption

448 000 litres

10.0 Total diesel fuel and heating oil consumption

799 000 litres

11.0 Delivered cost of diesel fuel   11.1 Delivered cost of heating oil

.4783¢/litre

12.0 Distance to nearest grid point

Connection to provincial grid not possible at the moment.

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	Not known	200	87-88	Not known	335
82-83	±	210	88-89	Not available	
83-84	±	245	89-90	±	±
84-85	±	280	90-91	±	±
85-86	±	305	91-92	±	±
86-87	±	320			

15.0 Inventory of building stock

1. Warehouses: 1 municipal
   1 COOP
   1 HBCO
2. Garage: 1 municipal
3. Office building: none
4. Firehall: none
5. Laundry: none

16.0 Diesel installations

42081	kW	No of Units
Caterpillar D-333 series 66D-6194	125	2
Caterpillar D-343 series 62B-15103	250	3
Caterpillar D-343 series 62B-177727	250	1

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 325
Total no. of families: 64
No. of houses occupied: 48
Average no. of families per house: 1
Maximum: 3 Minimum: 1
Average no. of occupants per house: 7
Maximum 13 Minimum: 3
No. of houses habitable: 45

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	2	1		42		3		
B) Ideal Community Distribution of houses			2	23	11	13	8	5-6
C) Immediate Community needs for housing					2	4	2	1

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Proposed energy efficiency projects
2. Rate structure change	Projects: Improvements to installations
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High 3,4,5
5. Time of use measures	Low 1,2

REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Projects:
3. Wind/diesel systems	
4. Wood biomass	
5. Peat biomass	Feasibility High 2,3
	Low 1,4,5

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit 2. Insulation retrofit 3. Air envelope retrofit 4. Window/door retrofit 5. Super-efficient norms for new construction 6. Set-back thermostat 7. Hot water heating conservation measures 8. Higher efficiency furnace retrofit 9. Heat pumps 10. Waste heat recovery 11. Energy conservation education	Studies: Projects: Feasibility High 1,2,3,4,5,6,7,8,10,11 Low 9
REPLACEMNT OPTIONS	
1. Connection to main grid 2. Rate structure change for oil based electrical heating 3. Cogeneration 4. District heating 5. Wind systems 6. Wood systems 7. Peat systems 8. Active solar	Studies: Projects: Feasibility High 2,3,5,8 Low 1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: KUUJJUARAAPIK   Ecoregion: NOUVEAU QUEBEC

1.0 LOCATION

55° 16' N
77° 66' W

The community of Kuujjuaraapik, known as Great Whale River and Poste de la Baleine, is located on the eastern shore of Hudson Bay at the mouth of the Great Whale River. The settlement is situated on flat, rolling terrain, at the northern limit of the subarctic treeline.

2.0 TOPOGRAPHY

The community is located at the extent of the treeline in the taiga region of Northern Quebec. The inland area northeast and east of the community is also hilly with elevations rising to 435 m (1414 ft). The interior consists of lakes and wetlands. Three major drainage basins are located in the Kuujjuaq region: the Whale, False and Koksoad Rivers.

3.0 CLIMATE

The climate of Kuujjuaraapik is typical of subarctic regions: winters are long, cold and dry, whereas summers are short, cool and wet. Spring and fall are characterized by storms and unsettled weather.

Meteorological data recorded for the region from 1931 to 1960 shows an average July temperature of 16°C with a maximum of 21°C and a minimum of 10°C. The average January temperature is -28°C with a maximum of -20°C and a minimum of -26°C.

Kuujjuaraapik is located in the permafrost zone of Northern Quebec.

4.0 HISTORY

The community's Inuktitut name Kuujjuaraapik means "Little River".

The community is located along Manitounuk Sound and Islands, which are productive marine and bird resource areas used heavily by the Inuit of Kuujjuaraapik.

5.0 DEMOGRAPHY

In 1980, the population of Kuujjuaraapik consisted of 733 individuals, 575 of them Inuit (not including the Cree population of 400). The community comprises 135 families, 112 being Inuit.

The Inuit population is composed of 266 females and 309 males. It is divided into the following age groups: 234 individuals of 15 years of age or less form the first group and represent 41% of the total Inuit population; 143 people aged from 16 to 25 years from the second group, which represents 25% of the total Inuit population and finally, the third group is made up of 197 individuals aged 26 to 85 years, who account for 34% of the total Inuit population.

The average household size is 6; the largest unit is a 12-person household and the smallest ones are the one-person households.

Over the last ten years the population of Kuujjuaraapik has increased from 517 to 733 people. Births being more numerous than deaths, the population is increasing by approximately 3.5 to 4 per cent each year.

6.0 POLITICAL ORGANIZATION

Kuujjuaraapik is the regional administrative center in Northern Quebec for the Hudson Bay coastal communities.

Administrative bodies in the community comprise local government and the community council, which manage municipal service, and the Sakkug, or Great Whale River Landholding Corporation, which administers Category I and II lands and protects Inuit rights provided by the James Bay and Northern Quebec Agreement.

7.0 ECONOMY

7.1 Major activities

In Kuujjuaraapik between 1973-78, 49% of the harvest was derived from marine mammals and 51% from fish, caribou, small game and waterfowl.

7.2 Employment

One of the main sources of income for the Inuit of Kuujjuaraapik consists of hunting, fishing and trapping. These activities not only provide money, but also food for the community. There is a potential wage earning work force of 218, representing 36% of the total population. In March 1980, 53% of the eligible Inuit labor foce held full- or part-time employment.

The Hudson's Bay Company, the Cooperative and Austin Airways are the principal commercial employers. The local government and community council, the Kativik School Board, the Inuit Landholding Corporation, the Department of Social Affairs, the Department of Public Works and Supply and Hydro Quebec are the major public employers in the community.

7.3 Occupational skills

Electricians, carpenters, heavy equipment operators, managers and nurse's aides.

7.4 Tourism

Unavailable.

8.0 RENEWABLE RESOURCES

Initial harvest collection data shows that over 94,000 kg (200,000 lbs) of edible meat were derived from land and marine resources.

9.0 NON RENEWABLE RESOURCES

Iron ore deposits.

10.0 PRICES AND INCOME

Total income for the community of Kuujjuaraapik in the year 1976 was $1,695,666.00 representing a per capita revenue of $2,874.00 or $15,901.00 per family.

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located on the Great Whale River, just south of the settlement. The water is initially pumped untreated into a reservoir, then it is pumped directly into the provincial and federal government buildings located at an old airforce base. The Inuit and Cree communities take water for home delivery form a fire hydrant which is connected to the main reservoir.

Water is collected and delivered by two 1400 gallon water tank trucks. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 1,400,000 gallons, representing a per capita use of 6.3 gallon per day.

11.2 Sanitation

Since there is no sewage system in Kuujjuaraapik, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Garbage is picked up daily, with home collection of dewage and solid wastes. The dump site is located .8 km (.5 m) north of the community. The method used at the dump site is open incineration and there are no landfill operations. Solid waste is collected by two garbage trucks.

12.0 TRANSPORTATION

12.1 Air facilities

The community is directly linked to southern Quebec via regular scheduled flights provided by Nordair, 3 to 4 times per week, depending on the season. Kuujjuaraapik is a base for Austin Airways, a regional airline which offers regular scheduled Twin Otter and F-748 service to the Hudson Bay coast and Hudson Strait communities. Austin Airways also provides services to Moosenee, Timmins and other Cree communities in James Bay.

12.2 Road

There are 5.5 km (3.4 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Long-distance telephone communications are provided by Bell Canada (via microwave through Val d'Or). Bell Telephone provides local telephone services. The two local FM stations, one in French and one in Inuktitut are also used by the community as a means of communication. Canada Post provides regular postal service. A local TV station can provide live and taped coverage of local events.

14.0 SOCIAL SERVICES

14.1 Medical

The Health and Welfare Canada runs a federal and provincial nursing station which will soon be amalgated.

14.2 Social services

Post office.

14.3 Protection

Law enforcement services are provided by two constables and a corporal of the Quebec Police Force.

14.4 Religion

Religious services are offered by the Anglican mission.

15.0 EDUCATION

Primary education is offered by the Katicvik School Board.
Total: 232 students.

16.0 BASIC NEEDS

New upgraded housing to meet the immediate shortages and the development of adequate airstrip, water, sewage, garbage and electrical services.

ENERGY PROFILE

Community: KUUJJUARAAPIK (Poste de la Baleine)

Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: D3 Domestic without heating

4.2 commercial: Gl General without heating

4.3 industrial: None

4.4 total: 2 443 796 Subscriptions: 302

5.0 Peak load (kWh): 1 040

5.1 Peak load date: 82-01-18

6.0 Tarification:

D3 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 20 kwh per day.
15.0¢ per kwh for the remaining consumption.

Gl Same as previous rate, but the use of electricity for the heating of water and of premises and for outdoor heating is forbidden.

19 Hydro Quebec building

7.0 Rate payment profile (consumer, community, other)

Residential subscriptions: Municipal Council
Others: Each government department or public or private organization.

8.0 Annual diesel fuel consumption

1 562 460 litres/5 019 MWH.

9.0 Annual heating oil consumption

2 977 105 litres

10.0 Total diesel fuel and heating oil consumption

4 539 365 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.5375¢/litre (82-06-09)

12.0 Distance to nearest grid point

40 km. from the future GB-1 plant.

13.0 Year in which grid connection is foreseen

GB-1 should be started in 1988

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	5 400	1 040	87-88	8 270	1 600
82-83	5 715	1 040	88-89	not available	
83-84	6 175	1 125	89-90	±	±
84-85	6 680	1 215	90-91	±	±
85-86	7 165	1 410	91-92	±	±
86-87	7 780	1 505			

15.0 Inventory of building stock

1.	Warehouses:	2 municipal 3 COOP 2 HBCO
2.	Garage:	1 municipal
3.	Office building:	(1)
4.	Firehall:	none
5.	Laundry:	(1)

16.0 Diesel installations

42083	kW	No of Units
Caterpillar D-399 series 35B-972	800	1
Caterpillar D-399 series 35B-1260	800	2
Caterpillar D-399 series 35B-2729	800	3

KATIVIK REGIONAL GOVERNMENT
INUIT HOUSING STUDY 1980

Present Situation:

Total Population: 604
Total no. of families: 115
No. of houses occupied: 101
Average no. of families per house: 1
Maximum: 3 **Minimum:** 1
Average no. of occupants per house: 6
Maximum: 12 **Minimum:** 1
No. of houses habitable: 75

HOUSING STATUS

	Matchboxes & A-frames	Oldstyle pre 1970	2-bedr. houses	3-bedr. houses	4-bedr. houses	5-bedr. houses	6-bedr. houses	bachelor units of 4
A) Actual Community Distribution of houses	12	14		73		2		
B) Ideal Community Distribution of houses			9	42	26	27	5	22-26
C) Immediate Community needs for housing					13	19	2	6

Kuujjuarapik

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Projects: Feasibility High 3,4,5 Low 1,2
REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Proposed energy studies Projects: Study of a combined wind/diesel project. Feasibility High 2,3 Low 1,4,5

Kuujjuarapik

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS — **STUDIES AND FEASIBILITY**

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies:
Projects:

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,3,5,8
Low	1,4,6,7

SOCIO-ECONOMIC PROFILE

Community: Asbestos Hill **Ecoregion:** NOUVEAU QUEBEC

1.0 LOCATION

62° N
74° W

The sea terminal is on the southern extremity of Deception Bay on the shores of Hudson Strait, with the mine 42 road miles inland at an elevation of 1,700 feet above sea level.

2.0 TOPOGRAPHY

The terrain is gently rolling and barren, except for limited areas of tundra in low-lying areas.

3.0 CLIMATE

November to April still-air temperatures range from zero to -55°F, and the wind chill effect can reduce this by another 20 to 40°.

Summer: for 8 to 10 weeks the temperature is 45 to 50°.

The ground is permanently frozen to varying depths down to 1,800 ft.

4.0 HISTORY

Asbestos deposits were identified in 1957 and in 1964 work was started on site preparation at Asbestos Hill. June 1972 saw the first production of upgraded fibre, and in August 1972 the first bulk shipment was sent to the finishing plant in Germany. Changeover to underground mining will be completed by 1982.

5.0 DEMOGRAPHY

Not available.

6.0 POLITICAL ORGANIZATION

Not available.

7.0 ECONOMY

7.1 Major activities

7.2 Employment

7.3 Occupational skills

Mechanics, cooks, electricians, engineers.

7.4 Tourism

8.0 RENEWABLE RESOURCES

9.0 NON RENEWABLE RESOURCES

10.0 PRICES AND INCOME

11.0 INFRASTRUCTURE

11.1 Water

Water supply is a critical item on the list and costs can differ widely, depending on location. Permafrost precludes any possible well drilling and the land surface is frozen solid for 8 months of the year. Economics will determine the use of reservoirs replenished by the spring run-off, or the use of the closest deep-water lake. For 9 months of the year, the Asbestos Hill supply is brought in by tank truck from a small lake 10 miles away. The average consumption is 250,000 gallons per week. During the same period, water for the Deception Bay camp is trucked 27 miles. The average requirement is 25,000 gallons per week. During the summer period, the closest water run-off to either location is used for supply. Pumping facilities, haulage trucks, and storage and distribution facilities must be operated and maintained, and the roads kept open through the long winter. Reference to an 80-cent shower and a 20-cent flush is factual and not fictitious.

11.2 Sanitation

Sewage disposal.

12.0 TRANSPORTATION

12.1 Air facilities

Air transport is reserved for perishable food supplies, emergencies, and light, high-value stock.

12.2 Road

12.3 Water

Boat of personnel and supplies over long distances.

13.0 COMMUNICATIONS

Radio, telephone and telex communications.

14.0 SOCIAL SERVICES

14.1 Medical

Medical facilities and supplies

14.2 Social services

14.3 Protection

Fire protection

14.4 Religion

15.0 EDUCATION

16.0 BASIC NEEDS

ENERGY PROFILE

Community: Asbestos Hill **Ecoregion: NOUVEAU QUEBEC**

1.0 Type of electrical service (200A, 100A, 20A, no service)

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: Subscriptions:

5.0 Peak load (kWh)

5.1 Peak load date:

6.0 Tarification:

7.0 Rate payment profile (consumer, community, other)

8.0 Annual diesel fuel consumption

5 926 500 litres

9.0 Annual heating oil consumption

2 335 500 litres

10.0 Total diesel fuel and heating oil consumption

8 262 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.5175¢/ litre

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

Year	MHW	Year	MHW

15.0 Inventory of building stock

16.0 Diesel installations

42083	No. of Units

Asbestos Hill

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	Feasibility
4. Energy efficient electrical appliances and lighting	High
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	Studies:
2. Mini hydro	Projects:
3. Wind/diesel systems	
4. Wood biomass	Feasibility
5. Peat biomass	High
	Low

Asbestos Hill

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit	**Studies:** **Projects:**
2. Insulation retrofit	
3. Air envelope retrofit	
4. Window/door retrofit	
5. Super-efficient norms for new construction	
6. Set-back thermostat	
7. Hot water heating conservation measures	
8. Higher efficiency furnace retrofit	**Feasibility**
9. Heat pumps	**High**
10. Waste heat recovery	**Low**
11. Energy conservation education	

REPLACEMNT OPTIONS	
1. Connection to main grid	
2. Rate structure change for oil based electrical heating	**Studies:** **Projects:**
3. Cogeneration	
4. District heating	
5. Wind systems	
6. Wood systems	
7. Peat systems	**Feasibility**
8. Active solar	**High** **Low**

SOCIO-ECONOMIC PROFILE

Community: BELLETERRE

Ecoregion: CENTRAL

1.0 LOCATION

47.5° N
77.5° W

2.0 TOPOGRAPHY

Forest region south of Lake Simon

3.0 CLIMATE

Degree days 5000 - 6000.

4.0 HISTORY

Mining town.

5.0 DEMOGRAPHY

520.

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

7.1 Major activities

Veneer Company

7.2 Employment

7.3 Occupational skills

7.4 Tourism

8.0 RENEWABLE RESOURCES

Timber

9.0 NON RENEWABLE RESOURCES

10.0 PRICES AND INCOME

- 11.0 INFRASTRUCTURE
  - 11.1 Water
  - 11.2 Sanitation
- 12.0 TRANSPORTATION
  - 12.1 Air facilities
  - 12.2 Road
  - 12.3 Water
- 13.0 COMMUNICATIONS
- 14.0 SOCIAL SERVICES
  - 14.1 Medical
  - 14.2 Social services
  - 14.3 Protection
  - 14.4 Religion
- 15.0 EDUCATION
- 16.0 BASIC NEEDS

ENERGY PROFILE

Community: BELLETERRE Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

Not available

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Town of Winneway.

3.0 Source of electrical service (diesel, hydro, other)

Winneway Hydro dam located in the neighbouring town of Winneway, which sells the electricity from its municipal dam to Belleterre. Winneway is connected to the Hydro Quebec grid. 2750 kw generated by Winneway Hydro.

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: Subscriptions:

5.0 Peak load (kWh)

5.1 Peak load date:

6.0 Tarification:

7.0 Rate payment profile (consumer, community, other)

Individual customers.

8.0 Annual diesel fuel consumption

Not applicable.

9.0 Annual heating oil consumption

100 houses heated by oil 315 000 litres

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.33¢/litre

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

Town turned down Hydro Quebec bid as too costly compared with buying from Winneway.

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW

15.0 Inventory of building stock

1. Warehouses:
2. Garage:
3. Office building:
4. Firehall:
5. Laundry:

16.0 Diesel installations

42083 kW No of Units

Belleterre ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Projects:
3. Wind/diesel systems	
4. Wood biomass	
5. Peat biomass	Feasibility High
	Low

Belleterre

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit	Studies: Projects:
2. Insulation retrofit	
3. Air envelope retrofit	
4. Window/door retrofit	
5. Super-efficient norms for new construction	
6. Set-back thermostat	
7. Hot water heating conservation measures	
8. Higher efficiency furnace retrofit	Feasibility
9. Heat pumps	High
10. Waste heat recovery	Low
11. Energy conservation education	

REPLACEMNT OPTIONS	
1. Connection to main grid	Studies:
2. Rate structure change for oil based electrical heating	Projects:
3. Cogeneration	
4. District heating	
5. Wind systems	
6. Wood systems	Feasibility
7. Peat systems	High
8. Active solar	Low

SOCIO-ECONOMIC PROFILE

Community: GAGNON　　Ecoregion: CENTRAL

1.0 LOCATION

52° N
68° W

2.0 TOPOGRAPHY

The terrain is hilly and forested.

3.0 CLIMATE

Mean annual air temperature of -4°C.

4.0 HISTORY

Mining town

5.0 DEMOGRAPHY

1,200.

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

7.1 Major activities

Mining, Sidbec-Normines iron ore complex.

7.2 Employment

7.3 Occupational skills

7.4 Tourism

8.0 RENEWABLE RESOURCES

9.0 NON RENEWABLE RESOURCES

10.0 PRICES AND INCOME

11.0 INFRASTRUCTURE

11.1 Water

11.2 Sanitation

12.0 TRANSPORTATION

- 12.1 Air facilities
- 12.2 Road
- 12.3 Water

13.0 COMMUNICATIONS

14.0 SOCIAL SERVICES

- 14.1 Medical
- 14.2 Social services
- 14.3 Protection
- 14.4 Religion

15.0 EDUCATION

16.0 BASIC NEEDS

ENERGY PROFILE

Community: GAGNON Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hart-Jaune Company, Fifty Foot Falls Hydro Station

3.0 Source of electrical service (diesel, hydro, other)

Hydro

4.0 Annual electrical demand (kWh)

4.1 residential: 25 665 562 kWh

4.2 commercial: 922 116 kWh

4.3 industrial: 117 108 730 kWh

4.4 total: 153 686 000 kWh (sold)

5.0 Peak load (kWh)

5.1 Peak load date:

6.0 Tarification:

Residential: 1.2 - 1.5 kwh

Commercial: .10¢ KVA

Industriel: .20¢ KVA

7.0 Rate payment profile (consumer, community, other)

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

3 787 900 litres

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.23¢/litre

12.0 Distance to nearest grid point

200 K

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW

15.0 Inventory of building stock

1. Warehouses:
2. Garage:
3. Office building:
4. Firehall:
5. Laundry:

16.0 Diesel installations

42083 kW No of Units

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Projects:
3. Wind/diesel systems	
4. Wood biomass	
5. Peat biomass	Feasibility High
	Low

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies:
Projects:

Feasibility

High

Low

REPLACEMNT OPTIONS	

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High

Low

SOCIO-ECONOMIC PROFILE

Community: SELBAIE **Ecoregion**: CENTRAL

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

4.0 HISTORY

5.0 DEMOGRAPHY

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

7.1 Major activities

7.2 Employment

7.3 Occupational skills

7.4 Tourism

8.0 RENEWABLE RESOURCES

9.0 NON RENEWABLE RESOURCES

10.0 PRICES AND INCOME

11.0 INFRASTRUCTURE

11.1 Water

11.2 Sanitation

12.0 TRANSPORTATION

12.1 Air facilities

12.2 Road

12.3 Water

13.0 COMMUNICATIONS

14.0 SOCIAL SERVICES

- 14.1 Medical
- 14.2 Social services
- 14.3 Protection
- 14.4 Religion

15.0 EDUCATION

16.0 BASIC NEEDS

ENERGY PROFILE

Community: SELBAIE Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Selbaie Mines division of Selco Canada

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: 36 353 111

5.0 Peak load (kWh)

5.1 Peak load date:

6.0 Tarification:

7.0 Rate payment profile (consumer, community, other)

8.0 Annual diesel fuel consumption

10 509 637

9.0 Annual heating oil consumption

2 250 892 litres

10.0 Total diesel fuel and heating oil consumption

12 760 525 litres

11.0 Delivered cost of diesel fuel	11.1 Delivered cost of heating oil
.29¢/litre	.29¢/litre

12.0 Distance to nearest grid point

30 km

13.0 Year in which grid connection is foreseen

Not foreseen

14.0 Projected energy consumption for 1992

Will increase significantly as it is a new mine.

Selbaie

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
4. Energy efficient electrical appliances and lighting	Feasibility High
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Projects:
3. Wind/diesel systems	
4. Wood biomass	
5. Peat biomass	Feasibility High
	Low

ECONOMY/REPLACEMENT OPTIONS

Selbaie

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit	Studies: Projects:
2. Insulation retrofit	
3. Air envelope retrofit	
4. Window/door retrofit	
5. Super-efficient norms for new construction	
6. Set-back thermostat	
7. Hot water heating conservation measures	
8. Higher efficiency furnace retrofit	Feasibility
9. Heat pumps	High
10. Waste heat recovery	Low
11. Energy conservation education	

REPLACEMNT OPTIONS	
1. Connection to main grid	
2. Rate structure change for oil based electrical heating	Studies: Projects:
3. Cogeneration	
4. District heating	
5. Wind systems	
6. Wood systems	Feasibility
7. Peat systems	High
8. Active solar	Low

SOCIO-ECONOMIC PROFILE

Community: SCHEFFERVILLE **Ecoregion:** NOUVEAU QUEBEC

1.0 LOCATION

54° 48' N
66° 48' W

Located 500 km north of Sept-Iles, in the centre of the Nouveau Quebec - Labrador peninsula.

2.0 TOPOGRAPHY

Flat and low-lying.

3.0 CLIMATE

Because of its central location the Eastern Canadian Subarctic, the region has a climate cooler by some 8°C (mean annual air temperature of -4.7°C) than other locations at the same latitude. The climate is marked by short and relatively warm summers and by long and very cold winters. The lowest temperature recorded (-48°C, January, 1957) gives only a partial indication of the long cold winter months, when mean minimum air temperatures are around -26°C (January and February).

Wind speed is generally about 4.6 per second (with mean maxima of 22 meters per second).

4.0 HISTORY

Founded in 1955, Shefferville is an isolated mining town in Nouveau Quebec. The new Naskapi Village is located 9 miles outside Schefferville and has 55 new houses. The proposed electrical supply is carried by 13.2 KV overhead line from the main substation, which is owned and operated by the Schefferville Power Co. and Iron Ore Co. of Canada.

5.0 DEMOGRAPHY

1968:	308
1978:	397

Spoken language: Naskapi and English

6.0 POLITICAL ORGANIZATION

Not available.

7.0 ECONOMY

7.1 Major activities

Hunting, fishing, trapping.

7.2 Employment

In 1975 93.1% of the population worked for Iron Ore Co. Operation to be closed June 1983.

7.3 Occupational skills

Mineral extraction related skills.

7.4 Tourism

The town's second industry is tourism, Schefferville being a base for anglers and hunters.

8.0 RENEWABLE RESOURCES

Caribou.

9.0 NON RENEWABLE RESOURCES

Iron ore, zirconium, molybdenum.

10.0 PRICES AND INCOME

With the departure of Iron Ore Co.; it is difficult to estimate for the coming years.

11.0 INFRASTRUCTURE

11.1 Water

Aqueduc.

11.2 Sanitation

Garbage collection, storm drainage, water and sewer services.

12.0 TRANSPORTATION

12.1 Air facilities

Airport, Twin Otter flights to Labrador City a few times a week.

12.2 Road

Not available.

12.3 Water

Not available.

13.0 COMMUNICATIONS

Not available

14.0 SOCIAL SERVICES

14.1 Medical

There are 39 beds, 27 in the medical and surgery unit, and 12 in the pediatrics unit.

Physician, 25 full-time nursing employees, and 28 non-medical employees.

Specialized services include care by an anaesthetist, an oculist, a gynaecologist, and a dentist.

14.2 Social services

Not available.

14.3 Protection

Fire and police protection.

14.4 Religion

Catholic, anglican, United Church.

15.0 EDUCATION

Three schools.

The first is a francophone elementary school, under the jurisdiction of the Commission scolaire catholique de Schefferville; the second, a francophone high school, is administered by the Commission scolaire regionale du Gulfe; while the third school is anglophone, offering both elementary and secondary instruction, under the authority of the Greater Seven Islands and Eastern Quebec School Boards.

16.0 BASIC NEEDS

Energy security, employment.

ENERGY PROFILE

Community: SCHEFFERVILLE Ecoregion: NOUVEAU QUEBEC

1.0 Type of electrical service (200A, 100A, 20A, no service)

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

3.0 Source of electrical service (diesel, hydro, other)

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: Subscriptions:

5.0 Peak load (kWh)

5.1 Peak load date:

6.0 Tarification:

7.0 Rate payment profile (consumer, community, other)

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW

15.0 Inventory of building stock

1. Warehouses:
2. Garage:
3. Office building:
4. Firehall:
5. Laundry:

16.0 Diesel installations

42083 kW No of Units

Schefferville

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	
	Studies:
2. Mini hydro	Projects:
3. Wind/diesel systems	
4. Wood biomass	
	Feasibility
5. Peat biomass	High
	Low

Schefferville

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit	Studies: Projects:
2. Insulation retrofit	
3. Air envelope retrofit	
4. Window/door retrofit	
5. Super-efficient norms for new construction	
6. Set-back thermostat	
7. Hot water heating conservation measures	
8. Higher efficiency furnace retrofit	Feasibility
9. Heat pumps	High
10. Waste heat recovery	Low
11. Energy conservation education	

REPLACEMNT OPTIONS	
1. Connection to main grid	Studies: Projects:
2. Rate structure change for oil based electrical heating	
3. Cogeneration	
4. District heating	
5. Wind systems	
6. Wood systems	
7. Peat systems	Feasibility High
8. Active solar	Low

SOCIO-ECONOMIC PROFILE

Community: KAWAWACHIKAMACH   Ecoregion: CENTRAL

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

4.0 HISTORY

5.0 DEMOGRAPHY

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

7.1 Major activities

7.2 Employment

7.3 Occupational skills

7.4 Tourism

8.0 RENEWABLE RESOURCES

9.0 NON RENEWABLE RESOURCES

10.0 PRICES AND INCOME

11.0 INFRASTRUCTURE

- 11.1 Water
- 11.2 Sanitation

12.0 TRANSPORTATION

- 12.1 Air facilities
- 12.2 Road
- 12.3 Water

13.0 COMMUNICATIONS

14.0 SOCIAL SERVICES

- 14.1 Medical
- 14.2 Social services
- 14.3 Protection
- 14.4 Religion

15.0 EDUCATION

16.0 BASIC NEEDS

ENERGY PROFILE

Community: KAWAWACHIKAMACH Ecoregion:

1.0 Type of electrical service (200A, 100A, 20A, no service)

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

3.0 Source of electrical service (diesel, hydro, other)

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: Subscriptions:

5.0 Peak load (kWh)

5.1 Peak load date:

6.0 Tarification:

7.0 Rate payment profile (consumer, community, other)

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW

15.0 Inventory of building stock

1. Warehouses:
2. Garage:
3. Office building:
4. Firehall:
5. Laundry:

16.0 Diesel installations

42083 kW No of Units

Kawawachikamach

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	Feasibility
4. Energy efficient electrical appliances and lighting	High
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Projects:
3. Wind/diesel systems	
4. Wood biomass	
5. Peat biomass	Feasibility High
	Low

Kawawachikamach

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit	Studies: Projects:
2. Insulation retrofit	
3. Air envelope retrofit	
4. Window/door retrofit	
5. Super-efficient norms for new construction	
6. Set-back thermostat	
7. Hot water heating conservation measures	
8. Higher efficiency furnace retrofit	Feasibility High
9. Heat pumps	Low
10. Waste heat recovery	
11. Energy conservation education	

REPLACEMNT OPTIONS	
1. Connection to main grid	Studies:
2. Rate structure change for oil based electrical heating	Projects:
3. Cogeneration	
4. District heating	
5. Wind systems	
6. Wood systems	Feasibility
7. Peat systems	High
8. Active solar	Low

SOCIO-ECONOMIC PROFILE

Community: GREAT WHALE RIVER **Ecoregion:** CENTRAL

1.0 LOCATION

55° 17' N
77° 45' W

The community is located on the eastern shore of Hudson Bay.

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

Not available.

4.0 HISTORY

Not available.

5.0 DEMOGRAPHY

The following figures are based on the most recently available beneficiary list compiled January 14, 1982 (Quebec Department of Social Affairs: Official list of native beneficiairies):

A.	Number of beneficiaries	405
B.	Number of beneficiaries living out of the community	- 8
C.	Number of residents in the community coming from other Cree communities in the region:	0
D.	Current total number of resident beneficiaries:	397

- TOTALS -

202	397	195

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

Trapper population (from 1980 Income Security Board Figures): 115.

8.0 RENEWABLE RESOURCES

Not available.

9.0 NON RENEWABLE RESOURCES

Not available.

10.0 PRICES AND INCOME

Government Transfer Payments (UIC, welfare, pension, family allowance)	00.5
Guaranteed Annual Income	16.0
Wage Income from Cree Entities	19.0
Band Council & band-administered Programs	10.3
Traditional Pursuits-related Income:	
Fur Sales	1.6
Handicraft Production	1.5
Employment Income from Local Enterprises:	
Non-locally owned	2.1
Locally owned	1.4
Other non-locally owned sources of Income	27.6
	100%

11.0 INFRASTRUCTURE

11.1 Water

The municipal water supply source is located on the Great Whale River, just south of the settlement. The water is initially pumped untreated into a reservoir, then it is pumped directly into the provincial and federal government buildings located at an old airforce base. The Inuit and Cree communities take water for home delivery from a fire hydrant which is connected to the main reservoir.

Water is collected and delivered by two 1400 gallon water tank trucks. Residents store water in 50 to 250 gallon tanks. A small number of homes have an internal plumbing system.

The approximate annual use of water by Inuit is 1,400,000 gallons, representing a per capita use of 6.3 gallon per day.

11.2 Sanitation

Since there is no sewage system in Juujjuaraapik, residents use the "honey-bucket system", which is common in the Arctic. The plastic containment bags are collected and destroyed at an open dump site.

Garbage is picked up daily, with home collection of sewage and solid wastes. The dump site is located .8 km (.5 m) north of the community. The method used at the dump site is open incineration and there are no landfill operations. Solid waste is collected by two garbage trucks.

12.0 TRANSPORTATION

12.1 Air facilities

The community is directly linked to southern Quebec via regular scheduled flights provided by Nordair, 3 to 4 times per week, depending on the season. Kuujjuaraapik is a base for Austin Airways, a regional airline which offers regular scheduled Twin Otter and F-748 service to the Hudson Bay coast and Hudson Strait communities. Austin Airways also provides services to Moosenee, Timmins and Other Cree communities in James Bay.

12.2 Road

There are 5.5 km (3.4 m) of community roads.

12.3 Water

The annual summer sealift, which transports bulk materials to the community, is provided by Chimo Shipping Lines.

13.0 COMMUNICATIONS

Not available.

14.0 SOCIAL SERVICES

14.1 Medical

Not available.

14.2 Social services

Not available.

14.3 Protection

Not available.

14.4 Religion

Not available.

15.0 EDUCATION

Student population & education levels:
(1981-82 school year enrolment)

A. Pre-Kindergarten:	14
B. Elementary:	101
C. Secondary:	39
D. Post-school:	7
TOTAL	161

(These figures reflect initial enrolment and do not take into account drop-out figures).

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: GREAT WHALE RIVER Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 85%
200 A.: 15%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: Subscriptions:

5.0 Peak load (kWh)

5.1 Peak load date:

6.0 Tarification:

7.0 Rate payment profile (consumer, community, other)

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW

15.0 Inventory of building stock

1. Warehouses:
2. Garage:
3. Office building:
4. Firehall:
5. Laundry:

16.0 Diesel installations

42083	kW	No of Units

Great Whale River

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Projects:
3. Wind/diesel systems	
4. Wood biomass	
5. Peat biomass	Feasibility High
	Low

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit	Studies: Projects:
2. Insulation retrofit	
3. Air envelope retrofit	
4. Window/door retrofit	
5. Super-efficient norms for new construction	
6. Set-back thermostat	
7. Hot water heating conservation measures	
8. Higher efficiency furnace retrofit	Feasibility
9. Heat pumps	High
10. Waste heat recovery	Low
11. Energy conservation education	

REPLACEMNT OPTIONS	
1. Connection to main grid	Studies:
2. Rate structure change for oil based electrical heating	Projects:
3. Cogeneration	
4. District heating	
5. Wind systems	
6. Wood systems	
7. Peat systems	Feasibility
8. Active solar	High
	Low

SOCIO-ECONOMIC PROFILE

Community: WEMINDJI **Ecoregion**: CENTRAL

1.0 LOCATION

53° 00' N
78° 47' W

The community is located on the eastern shore of James Bay.

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

Not available.

4.0 HISTORY

Not available.

5.0 DEMOGRAPHY

The following figures are based on the most recently available beneficiairy list compiled January 14, 1982. (Ministere des Affaires Sociales, Registre des Authochtones, Liste Officielle des beneficiaires).

A.	Number of beneficiaries:	796
B.	Number of beneficiaries:	- 135
		661
C.	Number of residents in the community coming from other Cree communities in the region:	+ 13
D.	Current total number of resident beneficiaries:	674

Age-Sex Profile

M	- TOTALS -	F
337	672	335

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

Trapper population: (from 1980 Income Security Board figures): 362.

8.0 RENEWABLE RESOURCES

Not available.

9.0 NON RENEWABLE RESOURCES

Not available.

10.0 PRICES AND INCOME

Government Transfer Payments (UIC, welfare, pension, family allowance)	10.6
Guaranteed Annual Income	25.5
Wage Income from Cree Entities	21.4
Band Council & band-administered Programs	19.0
Traditional Pursuits-related Income:	
Fur Sales	2.4
Handicraft Production	0.4
Employment Income from Local Enterprises:	
Non-locally owned	7.1
Locally owned	6.8
Other non-locally owned sources of Income	6.8
	100%

11.0 INFRASTRUCTURE

11.1 Water

Surface: Drainage in the community is limited to approximately 300-350 feet of open ditches.

A. There is a water intake for non-drinkable water located in the Manquatua River. The water is pumped through a 1/2 inch plastic PVC water conduit approximately 300 metres in length. The following buildings are serviced by this system:

Nursing station
School principal's house
School
Community Centre
Chief's house
2 teacher's residences
2 DIAND trailers
Hudson's Bay Co. Manager's house

Drinking water comes from a well situated 1 1/2 miles north of the community and which was built in 1981. The pump that was installed is temporary. There is no watermain connection to any building. Distribution of drinking water to all houses and public buildings is done by containers. The drinking water has been condemmed by the Quebec Department of Environment.

B. There are no water hydrants in the community.

11.2 Sanitation

Sewage:	There is no sewer main in the community. Most homes use outhouses. The buildings and residences listed in II.A above which are connected to the watermain for non drinkable water have septic tanks.
Infrastructure:	1. Major work is expected to begin in 1982 on water and sewage mains. A sewage lagoon is to be built west of the community near present airstrip. To date, funding has not been approved by federal Treasury Board.
Garbage disposal:	Solid waste in the community is picked up twice weekly and taken to an open dump. In summer a 10 wheel truck is used for pickups, in winter a snowmobile is used.

12.0 TRANSPORTATION

12.1 Air facilities

Austin Airways offers flights to the Community 5 times per week. Air Creebec has flights 3 times per week. Additional chartered flights transport mail, groceries, and general goods.

12.2 Road

There is no road access at any time of the year to the community.

Roads and Streets:	There are approximately 7.5 kilometres of gravel and sand roads with the community. This includes roads to the dump and the airstrip.
Street Lighting:	There are 20 lamps distributed throughout the community.

12.3 Water

Moosonee Transportation provides barge service to the community during the summer months.

13.0 COMMUNICATIONS

Not available.

14.0 SOCIAL SERVICES

14.1 Medical

Nursing station.

14.2 Social services

Not available.

14.3 Protection

Not available.

14.4 Religion

Anglican Mission.

15.0 EDUCATION

Student population and education levels:
(1981-82 School year enrolment)

A.	Pre kindergarten:	44	(These figures reflect initial enrolment and do not take into account drop-out figures)
B.	Elementary	134	
C.	Secondary	17	
D.	Post-School	11	
	TOTAL	206	

Local Education Authority: Cree School Board.

16.0 BASIC NEEDS

Unknown

ENERGY PROFILE

Community: WEMINDJI Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

M.A.I.N. DIAND

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: 2,500 000

5.0 Peak load (kWh)

5.1 Peak load date: Not available.

6.0 Tarification:

.67¢ per kwh of production credited to customers who have to pay.

7.0 Rate payment profile (consumer, community, other)

Indian and Northern Affairs pays for all energy apart from that used by non-native residents.

8.0 Annual diesel fuel consumption

720 000 litres

9.0 Annual heating oil consumption

688 500 litres

10.0 Total diesel fuel and heating oil consumption

1 408 500 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.2840¢/litre

12.0 Distance to nearest grid point

130 km

13.0 Year in which grid connection is foreseen

Not available

14.0 Projected energy consumption for 1992

Not available.

15.0 Inventory of building stock

Houses: A. As of January 1982 there were 102 residential houses in the community.

13 "old" houses
6 "white" houses
71 "cedar" houses
12 CHC Model 1 houses built in 1979
TOTAL 102

B. No drinkable water or sewer hookup.

C. Average number of people per house: 6.6.

Projections (Housing and Infrastructure)

A. Housing: The Cree Housing Corporation projects construction of 23 new residential houses and the demolition of 13 "old" houses, giving a total housing stock by 1984 of 112.

Inventory of non-residential buildings:

A. Commercial	Type of structure	Square footage	Year built
1. Hudson's Bay Company			
a. Warehouse		1 798	
b. Store		2 001	
c. Staff house		624	
d. Manager's house		910	
2. Austin Airway's		300	
3. Co-op	2 storey	1 800	1900

B. Non commercial

1.	Band Warehouse	unheated	4 000		
2.	Band garage	can house 2 vehicles	600		
3.	Cold chamber	13' high	1 080	(14040 cubic ft.)	
4.	Telesat		144		
5.	DGNQ	all wood	1 200		
6.	School	1 storey	10 032		1973
7.	One-room school	1 storey concrete foundation	798		1961
8.	Teacher's residence	triplex all wood 1 storey	2 592		1973
9.	Principal's residence	3 bedroom all wood	768		1960
10.	School Board Trailers				
	a. 1 12' X 57 1/2'	3 becroom	690		1978
	b. 2 14 x 74'		1 036		
	c. 1 12' X 60'	1 bedroom	720		
11.	Church rectory	with basement	600		
12.	Anglican Mission Hall		1 000		
13.	Nursing Station		1 960		1974
14.	Nurses' residence		890		1974
15.	Privately owned:	Nil			

Wemindji

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Proposed energy studies Projects: Petroleum Report. Daigneault/ SODAB, 1981. Feasibility High 1,3,4,5 Low 2

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Completed energy studies: Projects: An analysis of alternative energy sources for the community of Paint Hills. Macgildor Consultants. March 1982. Manquatua Power Project. SNC, Sept. 1981. Wemindji Energy Study, SNC., Nov. 1982. Proposed energy studies: Feasibility study: extension of line to Wemindji. Hydro Quebec, 1982. Feasibility High 2,3,4 Low 2,5

Wemingji

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects
Projects: Terms of reference for evaluating buildings in Quebec with a view to improving energy efficiency.

Feasibility

High 1,2,3,4,5,6,7,8,10,11
Low 9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies: Completed energy studies
Projects: Progress Report, Wemindji Energy Study. Sores Inc., June 1982.

Proposed energy studies
Community Wood Supply Program. Application to Employment & Immigration, Canada, 1980.

Feasibility

High 2,4,5,6,8
Low 1,3,7

SOCIO-ECONOMIC PROFILE

Community: EASTMAIN **Ecoregion**: CENTRAL

1.0 LOCATION

52° 15' N
78° 30' W

The community is located on the eastern shore of James Bay.

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

Not available.

4.0 HISTORY

Not available.

5.0 DEMOGRAPHY

The following figures are based on the most recently available beneficiary list compiled January 14, 1982. (Ministere des Affaires Sociales, Registre des Autochtones, Liste Officielle des beneficiaires).

A.	Number of beneficiaries:	367
B.	Number of feneficiaries living out of the community:	- 63
		304
C.	Number of residents in the community coming from other Cree communities in the region:	+ 25
D.	Current total number of resident benificiaries:	329

- TOTALS -

158	329	171

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

Trapper population (from 1980 Income Security Board Figures: 146).

8.0 RENEWABLE RESOURCES

Not available.

9.0 NON RENEWABLE RESOURCES

Not available.

10.0 PRICES AND INCOME

Government Transfer Payments (UIC, welfare, pension, family allowance)	13.5
Guaranteed Annual Income	19.9
Wage Income from Cree Entities	31.1
Band Council & band-administered Programs	5.4
Traditional Puirsuits-related Income:	
Fur Sales	6.4
Handicraft Production	1.1
Employment Income from Local Enterprises:	
Non-locally owned	5.2
Locally owned	——
Other non-locally owned sources of Income	17.2
	100%

11.0 INFRASTRUCTURE

11.1 Water

Surface Drainage: Nil

A. Water is pumped from a well into a 6500 gallon raw water reservoir where it is filtered, chlorinated, and then pumped into a 10,000 gallon holding-reservoir. A 900 metre long 100 mm. diameter castiron watermain which is traver-heated is connected to community taps and public buildings only. No homes are connected to the system. Water is distributed to houses by containers.

B. There are no hydrants in the community.

11.2 Sanitation

Sewage:	All public buildings have septic tanks. Homes have outhouses.
Infrastructure:	Work is expected to begin on water and sewer mains in 1982.
Garbage Disposal:	Solid waste is picked up and transported to a dump site from June 1 to October 31 twice per week.

12.0 TRANSPORTATION

12.1 Air facilities

Austin Airways offers flights to the community 5 times per week. Air Creebec has flights 3 times per week.

1. Airstrip length: 1,500 feet.

12.2 Road

There has been no winter road access to the community for the last two years. There has been a winter road to the L G 2 Matagami road.

Roads and Streets:	There are approximately 4.2 Kilometres of sand and gravel roads within the community.
Street Lighting:	There are 14 street lamps in the community.

12.3 Water

Moosonee Transportation provides a barge service up to three times in July and August, depending on volume.

13.0 COMMUNICATIONS

Not available.

14.0 SOCIAL SERVICES

14.1 Medical

Nursing station.

14.2 Social services

Not available.

14.3 Protection

Not available.

14.4 Religion

Roman Catholic Mission.

15.0 EDUCATION

English and French schools.

Student population and education levels:
(1981-82 school year enrolment)

A.	Pre-Kindergarten:	20
B.	Elementary	72
C.	Secondary	26
D.	Post-School	6
	TOTAL	124

(These figures reflect initial enrolment and do not take into account drop-out figures)

Local Education Authority: Cree School Board.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: EASTMAIN　　　　Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

M.A.I.N. DIAND

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: 1 500 000

5.0 Peak load (kWh)

5.1 Peak load date: Not available.

6.0 Tarification:

67¢ per kwh of production credited to customers who have to pay.

7.0 Rate payment profile (consumer, community, other)

Indian and Northern Affairs pays for all energy apart from that used by non-native residents.

8.0 Annual diesel fuel consumption

510 000 litres

9.0 Annual heating oil consumption

180 000 litres

10.0 Total diesel fuel and heating oil consumption

690 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.2840c/litre

12.0 Distance to nearest grid point

170 km

13.0 Year in which grid connection is foreseen

Not available.

14.0 Projected energy consumption for 1992

Not available.

15.0 Inventory of building stock

Houses: A. As of January 1982 there were 52 residential houses in the community:

47 "cedar" houses
5 "red" houses
TOTAL 52

B. No lots are serviced for infrastructure.
C. Average number of people per house: 6.3.

Projections (Housing and Infrastructure)

A. Housing: By 1984 the Cree Housing Corporation projects construction of 25 residential units and the demolition of 5 "red" houses, giving a projected total housing stock of 72.

A. Commercial:	Type of structure	Square Footage	Years Built
1. Hudson's Bay Company			
a. Store			
b. Manager's residence			
c. Warehouse	steel-type		
d. Warehouse	wood-type		
e. Gas shed			
2. Austin Airways			

B. Non commercial

1. Band office	1 056	1957
2. Recreation Hall	3 200	1951
3. Garage	2,400	1969-70
4. DIAND Warehouse		1969
5. Community freezer		1950
6. Police Station		
7. Cree School Board		
a) English School		
b) French School		
c) Teachers' residence		
d) 2 warehouses		
8. Nursing Station		
9. R.C. Mission		

EASTMAIN

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	**Studies:** Completed Energy Studies **Projects:** Petroleum Report, Daigneault/ SODAB, 1981. **Feasibility** **High** 1,3,4,5 **Low** 2

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	**Studies:** Completed Energy Studies: **Projects:** Feasibility study on mini-hydro Eastmain. JBEC, Vezina, Fortier Assocs. 1982. Feasibility study-power line extension to Eastmain. Hydro Quebec, JBEC, 1982. **Feasibility** **High** 2,3,4 **Low** 2,5

Eastmain

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects

Projects: Terms of reference for evaluating buildings in Quebec with a view to improving energy efficiency. George Tadros, DIAND, 1981.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:

Projects:

Feasibility

High	2,4,6,8
Low	1,3,7

SOCIO-ECONOMIC PROFILE

Community: OBEDJIWAN
OPITCIWAN

Ecoregion: CENTRAL

1.0 LOCATION

48° 30' N
73° W

The village of Obedjiwan lies 80 km to northwest of Parent in the country of Abitibi-Est. It is situated at the end of a peninsula that juts into the waters of the Gouin reservoir and is surrounded by extensive sand and pebble beaches.

Hidden in the heart of CIP forests, the reserve extends toward the north of the peninsula, covering an area 3 by 4 km, or 2,290 acres.

2.0 TOPOGRAPHY

Situated about 260 km to the north of Weymontachie and 500 km to the north of Manouane, Obedjiwan is the most isolated of the three villages.

3.0 CLIMATE

Winters are long and windy with abundant precipitation, while summers are very short, very hot and plagued by swarms of marauding insects. The climate, the location and the stingy soil have not facilitated agriculture in the area.

4.0 HISTORY

In 1910, the railway came into service and in 1911 preparations were made for harnessing the power of the rivers. In 1918, the site of Kikendash was flooded, together with the first village of Obedjiwan, and the community was forced to move. The new village of Obedjiwan was founded in 1920 and obtained its official reserve status in 1944.

5.0 DEMOGRAPHY

According to projections made by the Department of Indian and Northern Affairs, the population of the Obedjiwan reserve should increase by a third between 1980 and 1990. At present there are 1,103 residents.

6.0 POLITICAL ORGANIZATION

As well as being responsible for village administration, the Band Council also represents the population in dealings with the federal and provincial governments, ensures that various development or community service projects are run properly and halps villagers with social or administrative matters as necessary.

The Band Council is also active in seeking employment opportunities with lumber companies or the government.

At the present time, the Obedjiwan Band Council is composed of a chief and nine councillors.

Chief: Paul Mequish; councillors: Paul Awashish, Louis Cleary, Ferome Mequish, Alexandre Dube, Fernand-Denis Dame, Jacques Chachai, Benoit Awashish, Pascal Dube, Charles Guillaume Wezineau.

7.0 ECONOMY

7.1 Major activities

Game is still an important source of food, but in general, hunting, trapping and fishing only serve to supplement insufficient incomes.

7.2 Employment

The unemployment rate on the reserve is very high (50% in 1977).

The Band Council is now the main employer in Obedjiwan, providing nearly half of all jobs in the village.

7.3 Occupational skills

Not available.

7.4 Tourism

Not available.

8.0 RENEWABLE RESOURCES

Reforestation, particularly of black spruce.

9.0 NON RENEWABLE RESOURCES

Not available.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Not available.

11.2 Sanitation

Sewage disposal is provided, but there is no garbage collection.

12.0 TRANSPORTATION

12.1 Air facilities

Seaplane services are available for rental, but the minimum charge for a round trip is $300.00. This service is not offered in the spring and fall because it is impossible for the plane to land if the lake is not completely frozen or completely thawed.

12.2 Road

The road linking the village with highway 167 belongs to CIP. In recent winters the Department of Indian and Northern Affairs has paid for the snow-removal, but before this it was not a reliable access road since the company kept it open only to meet its own needs. There is no public transportation between Obedjiwan and Roberval but some Indians offer a taxi service for the round trip fare of $150.00.

12.3 Water

Not available.

13.0 COMMUNICATIONS

The village receives radio and television broadcasts transmitted by satellite.

14.0 SOCIAL SERVICES

14.1 Medical

Two nurses provide basic medical care in the village nursing station. They also offer prenatal counselling services.

A dentist and pediatrician visit the reserve once a year but for more specialized care villagers must go to Roberval.

14.2 Social services

Not available.

14.3 Protection

Not available.

14.4 Religion

Not available.

15.0 EDUCATION

There is one school, providing education from pre-kindergarten to pre-secondary levels. Eleven of the fifteen teachers in the school are Indian.

16.0 BASIC NEEDS

Not available.

ENERGY PROFILE

Community: **OBEDJIWAN** Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

M.A.I.N. DIAND

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: 2 000 000 kWh @ .67¢ kwh DIAND production cost.

5.0 Peak load (kWh): 450

5.1 Peak load date: Not available.

6.0 Tarification: .33 kWh commercial
non-native residents
institutions

7.0 Rate payment profile (consumer, community, other)

All except native residents.

8.0 Annual diesel fuel consumption

420 000 litres

9.0 Annual heating oil consumption

300 000 litres

10.0 Total diesel fuel and heating oil consumption

720 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.3049¢/litre

12.0 Distance to nearest grid point

200 km

13.0 Year in which grid connection is foreseen

Not available.

14.0 Projected energy consumption for 1992

Not available.

15.0 Inventory of building stock

The following peak demand is expected over the next five years:

1) Connection of 20 existing houses
2) Construction of 8-10 houses per year for the next five years.
3) Pumping station for water supply system in 1983.

Indian houses	83
Leonard Moar commercial buildings	3
Hudson's Bay Company commercial buildings	3
Community Hall	1
Band Office	
Storage premises (Band)	1
Police station with cell	1
Post office and radio telephone building	1
Generating stations (new and old)	2
Pumping station (drinking water supply)	1
Mobile homes, education	3
Church	1
Presbytery	1
Schools	3
Motels (residential)	2
Residence (Sisters)	1
Department of Indian and Northern Affairs buildings	2
Sewage pumping station	1
Nursing station	1
Trailer (nursing station)	1
Pumping station (septic tanks)	1
Telesat building	1

Obedjiwan

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS | STUDIES AND FEASIBILITY

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

Studies: Completed energy studies
Projects: Study of electricity needs in Obedjiwan.
George Tadros, Indian and Northern Affairs, 1982.

Feasibility

High 1,3,4,5

Low 2

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:
Projects:

Feasibility
High 2,3,4

Low 2,5

Obedjiwan

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects

Projects: Terms of reference for evaluating buildings in Quebec with a view to improving energy efficiency. George Tadros, Indian and Northern Affairs, 1981.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:

Projects:

Feasibility

High	2,4,5,6,8
Low	1,3,7

SOCIO-ECONOMIC PROFILE

Community: LAC RAPIDE **Ecoregion:** CENTRAL

1.0 LOCATION

47° 20' N
77° 40' W

The reserve is located in La Verendrye Provincial Park, on the west bank of the huge Cabonga Reservoir, bordering Baie des Rapides.

2.0 TOPOGRAPHY

The built-up area is in the southern part of the reserve, which is between 1,200 and 1,225 feet above sea level, and overlooks the bay, which is 1,180 feet above sea level.

3.0 CLIMATE

Not available.

4.0 HISTORY

The Lac Rapide reserve covers a 73 acre area of land belonging to the Oblate Fathers of Mary Immaculate, who have rented it to the Indian band for a period of 99 years.

5.0 DEMOGRAPHY

1981: 169 men
168 women

Population: 337

6.0 POLITICAL ORGANIZATION

The Government of Quebec has set aside this land for use by Indians (order-in-council No. 1895, September 7, 1961), under section 67 of the Quebec Lands and Forests Act. Right of reversion in favour of the Crown in right of Quebec.

Chief:	Jean-Maurice Matchewan
Band manager:	Michel Thusky
Address:	Conseil de Bande de Barriere Lake c/o Bureau de Poste Le Domaine Parc de la Verendrye Rapid Lake, Quebec G0W 1T0

Telephone: (819) 793-1712

7.0 ECONOMY

7.1 Major activities

Not available.

7.2 Employment

Not available.

7.3 Occupational skills

Not available.

7.4 Tourism

Not available

8.0 RENEWABLE RESOURCES

Not available.

9.0 NON RENEWABLE RESOURCES

Not available.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

The existing aqueduct system consists of 1.1 miles (5,700 ft) of water mains (6"diam). The water supply comes from a well 200 ft south of the school, outside the reserve territory (see Plan 5, Aqueduct-Sewers).

11.2 Sanitation

There are no sanitary sewers on the reserve. Most houses have recharge wells, while the school and a small number of houses have septic tanks.

Since there are no storm sewers, ditches are used to drain the site.

12.0 TRANSPORTATION

12.1 Air facilities

Not available.

12.2 Road

The five-mile gravel road that leads to the reserve joins highway 117 at a point 118 miles north of La Romaine and 25 miles south of Dorval-Lodge.

12.3 Water

Not available.

13.0 COMMUNICATIONS

Only community buildings and a few houses have telephone service (see Plan 6, Energy and Communications).

Spoken languages:	Algonquin:	100%
	English:	40%
	French:	30%

14.0 SOCIAL SERVICES

14.1 Medical

Not available.

14.2 Social services

Not available.

14.3 Protection

Not available.

14.4 Religion

Not available.

15.0 EDUCATION

Not available.

ENERGY PROFILE

Community: LAC RAPIDE Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

M.A.I.N. DIAND

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: 800 000 kWh

5.0 Peak load (kWh): 200

5.1 Peak load date: Not available.

6.0 Tarification:

.67¢ per kwh of production credited to customers who have to pay.

7.0 Rate payment profile (consumer, community, other)

Indian and Northern Affairs pays for all power except that used by non-native residents.

8.0 Annual diesel fuel consumption

400 000 litres

9.0 Annual heating oil consumption

150 000 litres

10.0 Total diesel fuel and heating oil consumption

550 000 litres

11.0 Delivered cost of diesel fuel 11.1 **Delivered cost of heating oil**

.3133¢/litre

12.0 Distance to nearest grid point

50 km

13.0 Year in which grid connection is foreseen

84-85 (possible)

14.0 Projected energy consumption for 1992

Not available.

15.0 Inventory of building stock

Homes	53
Community buildings	6
Services	2
TOTAL	61

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Completed energy studies Projects: Site inspection and Power distribution system study, Lac Rapide. George Tadros, DIAND, 1981. Feasibility High 1,3,4,5 Low 2

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Projects: Feasibility High 2,3,4 Low 2,5

Lac Rapide

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects

Projects: Terms of reference for evaluating buildings in Quebec with a view to improving energy efficiency. George Tadros, DIAND, 1981.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:

Projects:

Feasibility

High	2,4,5,6,8
Low	1,3,7

SOCIO-ECONOMIC PROFILE

Community: RUPERT HOUSE **Ecoregion**: CENTRAL

1.0 LOCATION

51° 30' N
78° 45' W

The community is located at the mouth of the Rupert River on Rupert Bay, on the southern shore.

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

Not available.

4.0 HISTORY

Not available.

5.0 DEMOGRAPHY

The following figures are based on the most recently available beneficiary list compiled January 14, 1982 (Ministere des Affaires Sociales, Registre des Autochtones, Liste Officielle des Beneficiaires).

A.	Number of beneficiaries:	1266
B.	Number of beneficiaries living out of the community:	- 350
		916
C.	Number of residents in the community coming from other Cree communities in the region	+ 30
D.	Current total number of resident beneficiaries:	946

Age and sex profile

	- TOTALS -	
458	946	488

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

Trapper Population (from 1980 Income Security Board Figures): 398.

8.0 RENEWABLE RESOURCES

Not available.

9.0 NON RENEWABLE RESOURCES

Not available.

10.0 PRICES AND INCOME

Government Transfer Payments (UIC, welfare, pension, family allownce)	18.7
Guaranteed Annual Income	20.5
Wage Income from Cree Entities	22.5
Band Council & band-administered Programs	18.9
Traditional Pursuits-related Income:	
Fur Sales	6.3
Handicraft Production	2.2
Employment Income from Local Enterprises:	
Non-locally owned	4.6
Locally owned	1.0
Other non-locally owned sources of Income	5.3
	100%

11.0 INFRASTRUCTURE

11.1 Water

Surface: Twelve culverts with a total length of 50 metres.

Underground: 675 metres of 255 mm. 16-guage corrugated steel pipe with Mirafi 140 covering.

There is a perimetal ditch of 850 metres for both surface and underground drainage. The underground part uses the same 250 mm. diameter pipe as described above.

A. Water is pumped from a well on the river bank. The well takes water directly from the Rupert River and it is pumped to a reservoir via a 530 metre raw water pipe. The water is treated and then distributed through a watermain network, which is approximately 4010 metres in length, to houses in the community. The water pipe is cast iron and 150 mm. in diameter. At the moment, 111 structures are hooked up to the watermain: 82 are private Cree houses, the remainder are public buildings.

B. There are 20 water hydrants in the community.

11.2 Sanitation

Sewage: At present, 103 lots are connected to the sewer main. The main consists of approximately 4,130 metres of 255 mm. diameter cast iron pipe. The main is connected to a temporary lagoon. A pump house forces the sewage through a force main 1,145 metres in length to the lagoon.

Infrastructure: In 1982, a new sewage lagoon on the west side of the community will be connected to the sewer main and become operational.

Garbage disposal: Solid waste is picked up twice weekly (Monday and Thursday) and taken to an open dump. Refuse is burned in winter.

12.0 TRANSPORTATION

12.1 Air facilities

Austin Airways offers flights to the community five times per week. Air Creebec has flights three times per week. Both of the above companies frequently offer additional charter service.
Airstrip Length: 2,500 feet.

12.2 Road

A winter road is constructed annually and is open for transportation in February and March.

Roads & Streets: There are approximately 25 kilometres of street and road in the community, including an access road to the gravel pit and dump site.

Street Lighting: Five (5) street lamps.

12.3 Water

Moosonee Transportation provides barge service twice yearly (in July & August) primarily for transportation of petroleum products.

13.0 COMMUNICATIONS

Not available.

14.0 SOCIAL SERVICES

14.1 Medical

Nursing station, doctor.

14.2 Social services

Not available.

14.3 Protection

Not available.

14.4 Religion

Anglican Mission, Evangelical Mission, Pentecostal Mission, Roman Catholic Mission.

15.0 EDUCATION

Two classroom buildings.

Student population & education levels:
(1981-82 school year enrolment)

A.	Pre-kindergarten:	44	(These figures reflect initial enrolment and do not take into account drop-out figures)
B.	Elementary:	241	
C.	Secondary:	81	
D.	Post-school:	9	
	TOTAL	375	

Local Education Authority: Cree School Board.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: FORT RUPERT Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

DIAND

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: 4 000 000 kWh

5.0 Peak load (kWh): 900

5.1 Peak load date: Not available.

6.0 Tarification:

.67¢ per kwh of production credited to customers who have to pay.

7.0 Rate payment profile (consumer, community, other)

Indian and Northern Affairs pays for all energy apart from that used by non-native residents.

8.0 Annual diesel fuel consumption

900 000 litres

9.0 Annual heating oil consumption

832 500 litres

10.0 Total diesel fuel and heating oil consumption

1 732 500 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.2840¢/litre

12.0 Distance to nearest grid point

250 km

13.0 Year in which grid connection is foreseen

Not available.

14.0 Projected energy consumption for 1992

Not available.

15.0 Inventory of building stock

Houses: A. As of January 1982 there were 130 residential houses in the community:

20 Band-financed houses built in 1975-76
24 CHC Model 1 houses built in 1976-77
5 CHC Model 1 houses built in 1977-78
20 CHC Model 1 houses built in 1978-79
11 CHC Model 1 houses built in 1979-80
25 "old" houses
25 "shacks"

TOTAL 130

Projections (housing & Infrastructure)

A. Housing: Between January 1982 and 1985 the Cree Housing Corporation expects to build 100 additional new houses.
50 "old" units will be demolished during this period. The total number of housing units projected for 1985 is therefore 180.

A. Commercial:	Type Structure	Square Footage	Year Built
Hudson's Bay Company			
a. Store	with basement	5 250	1972
b. Manager's residence		960	1960
c. Clerk's residence		300	1979
d. Gas shack		200	1946
e. Warehouse (old store)		1 600	1946

B. Non-Commercial:

1. Creeway Building	1 440	1981
2. Community Hall (warehouse)	4 000	1945
3. Band Office	1 840	1978
4. Warehouse #1	960	1960
5. Warehouse #2	500	1946
6. Warehouse #3	300	1975
7. Dome warehouse	1 500	1975
8. Canteen	96	1979
9. Classroom building #9 120	1975	
10. Classroom building #9 120	1975	
11. Classroom building #9,120	1975	
12. Gas station office	320	1981
13. Old powerhouse building	480	1965
14. Airstrip waiting room	320	1969
15. Garage	805	1955
16. Powerhouse building 150	1955	
17. Roman Catholic Mission		
a. residence	1 200	1978
b. school	3,500	1965
c. Fecteau house (residence)	1 800	1968
d. Motel	2 450	1972
e. Salle a Manger (residence)	750	1946
f. Teachers' residence	625	1946
g. warehouse	1 500	1950
h. garage	300	1960
18. Nursing Station	2 800	1971
19. Doctors' residence	960	1976
20. Old Nursing station	1 600	1952
21. Cree School Board		
a. Residence #1	960	1964
b. Residence #2	874	1955
c. Residence #3	1 200	1955
d. School 4-classroom 800	1964	
e. Classroom building 2-classroom	1 200	1955
22. D.I.A.N.D. powerhouse 800	1975	
23. Anglican Mission		
a. Residence	960	1979
b. Church	3 250	1950
24. Evangelical Mission Residence	805	
25. Pentecostal Mission	1 440	1976

C. Privately-Owned:

1. Blackned Construction Garage	3 150	1975
a. D.I.A.N.D. rented space	900	
2. Propair Ltd. Residence (rented to Cree School Board)	960	1976

Fort Rupert

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies: Completed energy studies

Projects: Budgetary planning for the construction of a new electric power station in Fort Rupert, (Diesel).
George Tadros, DIAND, 1981.
Petroleum Report. Daigneault/ SODAB 1981.

Feasibility

High 1,3,4,5,

Low 2

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:

Projects:

Feasibility

High 2,3,4

Low 2,5

Fort Rupert

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects

Projects: Terms of reference for evaluating buildings in Quebec with a view of improving energy efficiency. George Tadros, DIAND, 1981.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,4,5,6,8
Low	1,3,7

SOCIO-ECONOMIC PROFILE

Community: PARENT **Ecoregion**: CENTRAL

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

4.0 HISTORY

5.0 DEMOGRAPHY

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

7.1 Major activities

7.2 Employment

7.3 Occupational skills

7.4 Tourism

8.0 RENEWABLE RESOURCES

9.0 NON RENEWABLE RESOURCES

10.0 PRICES AND INCOME

11.0 INFRASTRUCTURE

11.1 Water

11.2 Sanitation

12.0 TRANSPORTATION

12.1 Air facilities

12.2 Road

12.3 Water

13.0 COMMUNICATIONS

14.0 SOCIAL SERVICES

14.1 Medical

14.2 Social services

14.3 Protection

14.4 Religion

15.0 EDUCATION

16.0 BASIC NEEDS

ENERGY PROFILE

Community: PARENT Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 2 218 496 (D1-0: 2 176 572 D1-1: 41 924)

4.2 commercial: 1 103 468 (G1-0: 905 688 G1-1: 197 780)

4.3 industrial: None Miscellaneous: 3 300 (19-79)

4.4 total: 3 325 264

5.0 Peak load (kWh): 1 200

5.1 Peak load date: 82-01-17

6.0 Tarification:

D1	23.0¢ fixed charge per day, plus 2.7¢ per kwh for the first 30 kwh per day. 3.37¢ per kwh for the remaining consumption.
G1	$6.90 fixed charge per month, plus $5.25 per kw of power billed in excess of 35 kw, plus 4.5¢ per kwh for the first 9,600 kwh. 2.6¢ per kwh for the remaining consumpion.
T3	Fixed rate
19	Hydro Quebec building
79	Public heating

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

1 256 969 litres/3 809 mwh. HQ	3,389 043 litres	Parent Sawmill and Papineau Dufour

9.0 Annual heating oil consumption

604 618 litres

10.0 Total diesel fuel and heating oil consumption

1 256 969
3 389 043
604 618

Total: 5 250 630 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.2985$/litre (82-06-09)

12.0 Distance to nearest grid point

Poste La Verendrye, 58 km. away.

13.0 Year in which grid connection is foreseen

Connection to Poste La Verendrye in 1985.

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	4 625	1 200	88-89	Not available	
82-83	5 300	1 375	89-90	±	±
83-84	6 032	1 565	90-91	±	±
85-86	6 822	1 770	91-92	±	±
86-87	7 593	1 970			
87-88	8 613	2 185			
87-88	9 520	2 415			

15.0 Inventory of building stock

Not available.

16.0 Diesel installations

42083	kW	No of Units
Caterpillar D-379A series 68B-4859	350	2
Caterpillar D-379A series 68B-780	400	1
Caterpillar D-399 series 35B-1644	800	3
Caterpillar D-399 series 35B-5164	800	4

PARENT

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Projects: Feasibility High 1,3,4,5 Low 2
REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Completed energy studies Projects: Connection to Poste La Verendrye planned for 1985. Establishment of wood-gasifier generating station in Parent, Abitibi. CRIQ, Quebec Industrial Research Centre 1980. Proposed energy studies Connection of Clova to Parent after 1985. Feasibility High 4 Low 1,2,3,5

Parent

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit 2. Insulation retrofit 3. Air envelope retrofit 4. Window/door retrofit 5. Super-efficient norms for new construction 6. Set-back thermostat 7. Hot water heating conservation measures 8. Higher efficiency furnace retrofit 9. Heat pumps 10. Waste heat recovery 11. Energy conservation education	Studies: Proposed energy efficiency projects Projects: Energain Feasibility High 1,2,3,4,5,6,7,8,10,11 Low 9
REPLACEMNT OPTIONS	
1. Connection to main grid 2. Rate structure change for oil based electrical heating 3. Cogeneration 4. District heating 5. Wind systems 6. Wood systems 7. Peat systems 8. Active solar	Studies: Projects: Feasibility High 2,3,4,6 Low 1,5,7,8

SOCIO-ECONOMIC PROFILE

Community: CLOVA   Ecoregion: QUEBEC CENTRAL

1.0 LOCATION

Not available at the present time

2.0 TOPOGRAPHY

3.0 CLIMATE

4.0 HISTORY

5.0 DEMOGRAPHY

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

7.1 Major activities

7.2 Employment

7.3 Occupational skills

7.4 Tourism

8.0 RENEWABLE RESOURCES

9.0 NON RENEWABLE RESOURCES

10.0 PRICES AND INCOME

11.0 INFRASTRUCTURE

11.1 Water

11.2 Sanitation

12.0 TRANSPORTATION

12.1 Air facilities

12.2 Road

12.3 Water

13.0 COMMUNICATIONS

14.0 SOCIAL SERVICES

14.1 Medical

14.2 Social services

14.3 Protection

14.4 Religion

15.0 EDUCATION

16.0 BASIC NEEDS

ENERGY PROFILE

Community: CLOVA   Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

30 A. et 60 A.

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Electro Clova Ltee (subsidized by Hydro Quebec)

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 110 451 kwh

4.2 commercial: 167 445 kwh

4.3 industrial: ---

4.4 total: 277 896 kwh

5.0 Peak load (kWh)

5.1 Peak load date: Not known

6.0 Tarification:

Fixed charge plus 7.25¢ per kwh.

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

241 737 litres

9.0 Annual heating oil consumption

145 197 litres

10.0 Total diesel fuel and heating oil consumption

386 934 litres

11.0 Delivered cost of diesel fuel   11.1 Delivered cost of heating oil

31¢/litre

12.0 Distance to nearest grid point

65 km from Parent, which will be connected to the grid in 1985.

13.0 Year in which grid connection is foreseen

Proposal to construct a line between Clova and Parent is being studied.

14.0 Projected energy consumption for 1992

Not available.

15.0 Inventory of building stock

Not available.

Clova

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects
Projects: Distribution loss reduction and improvement of production efficiency.

Feasibility

High 1,3,4,5

Low 2

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies: Proposed energy studies
Projects: Cost analysis of construction of 25 kv power line between Parent and Clova as opposed to maintaining diesel-generated power in Clova.

Feasibility
High 4

Low 1,2,3,5

Clova

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies:
Projects:

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,3,4,6
Low	1,5,7,8

SOCIO-ECONOMIC PROFILE

Community: WEYMONTACHIE   Ecoregion: CENTRAL

1.0 LOCATION

48° N
74° W

The Indian village of Weymontachie is located in the Upper St Maurice valley, in Laviolette County, about 160 km north of La Tuque. The nearest communities are the Attikamek villages of Manouane, 92 km to the south, and Obedjiwan, 140 km to the north.

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

The climate is one of extremes, with short, warm summers and long, cold winters. Temperatures are below freezing for more than seven months of the year. However, because of its location in the bottom of the valley, the village is fairly sheltered from strong winds. Precipitation is abundant, especially in winter. Hours of sunshine vary from 200 per month in summer to only 70 per month in winter. Because of these extremes, agriculture is a precarious activity.

4.0 HISTORY

The construction of the Gouin dam necessitated a supply base as near to the railway as possible.

The Fraser Brace Company, which was responsible for the construction of the dam, set up their base across the river from Weymontachie, at a plce they named Sanmaur, a contraction of the name St Maurice.

The population of Sanmaur continued to grow, even through most of the residents were lumberjacks, who do not usually remain in one place. By 1952, non-Indians outnumbered Indians in Weymontachie.

When the lumber camps in the area were abandoned, Sanmaur took on the appearance of a ghost town. Today there are only about 15 inhabitants left. Although the place looks deserted, the Indians still have to visit the village several times a day, either to buy their supplies or to go to the post office, the station or the church.

5.0 DEMOGRAPHY

Population: 613

Annual growth rate: 2.4%

6.0 POLITICAL ORGANIZATION

Each Indian village is represented by a Band Council, composed of a chief and his councillors. The council has a two-year mandate.

In the past, the candidate who received the most votes in the elections became the chief. In February 1979, however, the village decided to adopt the Iroquois custom of electing councillors, in this case six, who choose the chief among themselves.

7.0 ECONOMY

7.1 Major activities

Lumbering is still the main occupation. Game remains an important source of food, however, so that hunting, like fishing, may also be considered a major economic activity.

7.2 Employment

Although trapping still provides a source of supplementary income from time to time, blueberry picking has become less important in recent years due to lack of markets.

Guide services are still in fairly regular demand.

Each year a number of workers go to Abitibi to work in the small lumber mills run by the Cossette brothers.

It is difficult for women to find work in the area, as most jobs are in the wood industry.

7.3 Occupational skills

Not available.

7.4 Tourism

Not available.

8.0 RENEWABLE RESOURCES

Although decimated by fires and lumbering, the forests are still a dominant feature of the rugged landscape. The most common trees are black spruce, white spruce, birch and aspen.

As for wildlife, moose, bear and hare are still very common, but beaver recently had to be re-introduced in part of the region.

Rivers provide fishermen with whitefish, speckled trout, pike and dory.

9.0 NON RENEWABLE RESOURCES

Not available.

10.0 PRICES AND INCOME

Between 1945 and 1960, four jobbers, Dufour, Greleau, Moreau and Fraser and St-Arnaud were successively granted permission to cut timber on the reserve. With the money received from these operations, the community set up a Band fund. The money was invested and administered by the Department of Indian and Northern Affairs, and with accumulated interest now amounts to about $200,000.00.

11.0 INFRASTRUCTURE

11.1 Water

Not available.

11.2 Sanitation

Not available.

12.0 TRANSPORTATION

12.1 Air facilities

Not available.

12.2 Road

The companies maintain only those roads that serve lumbering zones, and since the location of these zones is continually changing, the roads, like the lumber camps they serve, become abandoned.

Thus, only one very poor road is still open to traffic between Sanmaur and La Tuque. The only link between Sanmaur and Weymontachie is a narrow walkway on the railway bridge, which can be crossed only on foot, by bicycle or by snowmobile in the winter.

For long journeys, residents of the area have to use the train. There is an early-morning train to Abitibi and an evening train to Quebec City, via La Tuque.

12.3 Water

In summer, the river can be crossed by canoe.

13.0 COMMUNICATIONS

Not available.

14.0 SOCIAL SERVICES

14.1 Medical

Besides the services offered by the nursing station and a doctor who visits the reserve every two weeks, there is a seven-member health committee, created in 1979, which informs villagers about preventive medicine and the medical services to which they are entitled.

14.2 Social services

The post office, telephone exchange and railway station are all in Sanmaur.

14.3 Protection

Not available.

14.4 Religion

Not available.

15.0 EDUCATION

The school is an imposing building which stands out above the small village houses. One hundred and ninety-seven children attend classes from pre-kindergarten to pre-secondary levels, taught by eleven teachers, six of them Indian and five non-Indian.

16.0 BASIC NEEDS

Recently, the Band Council asked the government to build a road to link the village of Weymontachie with the CIP road that goes to La Tuque. The village is about 45 km from this road and construction and maintenance costs would probably amount to several million dollars.

ENERGY PROFILE

Community: WEYMONTACHIE   Ecoregion: CENTRAL

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

DIAND

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: 1 500 000 kWh

5.0 Peak load (kWh) 300

5.1 Peak load date: Not available

6.0 Tarification:

.67¢ per kwh of production credited to customers who have to pay.

7.0 Rate payment profile (consumer, community, other)

Indian and Northern Affairs pays for all energy apart from that used by non-native residents.

8.0 Annual diesel fuel consumption

380 000 litres

9.0 Annual heating oil consumption

225 000 litres

10.0 Total diesel fuel and heating oil consumption

605 000 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.3790¢/litre

12.0 Distance to nearest grid point

125 km

13.0 Year in which grid connection is foreseen

Not available.

14.0 Projected energy consumption for 1992

Not available.

15.0 Inventory of building stock

Nursing station:	(1)
School:	(1)
Houses:	about 80.

Weymontachie

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Completed energy studies Projects: Study on electricity supply in Weymontachie. George Tadros, Indian and Northern Affairs. Feasibility High 1,3,4,5 Low 2

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Projects: Feasibility High 2,3,4 Low 2,5

Weymontachie

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects

Projects: Terms of reference for evaluating buildings in Quebec with a view of improving energy efficiency. George Tadros, DIAND, 1981.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:

Projects:

Feasibility

High	2,4,5,6,8
Low	1,3,7

SOCIO-ECONOMIC PROFILE

Community: TETE A LA BALEINE

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

January: maximum -7°C
minimum -16°C

July: maximum 15.5°C
minimum 9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

Michel Kenty settled further west at the Tete a la Baleine post, which was founded in 1824.

Arrival of the French Canadians (1830-1855)
Arrival of the Acadian families (1852-1855)

5.0 DEMOGRAPHY

Spoken language: French

1968: 375
1978: 446

6.0 POLITICAL ORGANIZATION

Each of the communities has a local committee composed of a chairman and a maximum of five councillors. The main purpose is to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Fishing, hunting, tourism.

7.2 Employment

Fishing, hunting.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is canned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family and community gardens and green houses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential and the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Lake.

11.2 Sanitation

River.

12.0 TRANSPORTATION

12.1 Air facilities

Hydravion.

12.2 Road

Not available.

12.3 Water

Quais.

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in goo T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspaper are delivered on the Lower North Shore with delays of a week or more, so that not many people are interedted in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

1 dispensary, 1 infirmary.

14.2 Social services

Post office.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

121 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: TETE A LA BALEINE
Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 1 788 500 (D1-0: 930 060 D1-1: 858 440)

4.2 commercial: 405 650 (G1-0: 342 580 G1-1: 63 060)

4.3 industrial: None Miscellaneous: 168 103 (T3, 79)

4.4 total: 2 362 243

5.0 Peak load (kWh)

5.1 Peak load date: Power supply from La Tabatiere

6.0 Tarification:

D1
23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 30 kwh per day.
3.37¢ per kwh for the remaining consumption.

G1
$6.90 fixed charge per month, plus
$5.25 per kw of power billed in excess of 35 kw, plus
4.5¢ per kwh for the first 9,600 kwh.
2.6¢ per kwh for the remaining consumption.

T3 Fixed rate

19 Hydro Quebec building

79 Public lighting

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Power supply from La Tabatiere.

9.0 Annual heating oil consumption

Power supply from La Tabatiere.

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel

11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Tete a la Baleine connected to La Tabatiere in 1979.

13.0 Year in which grid connection is foreseen

See La Tabatiere.

14.0 Projected energy consumption for 1992

See La Tabatiere.

15.0 Inventory of building stock

Not available.

Tete a la Baleine

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Projects: Feasibility High 1,2,3,4,5 Low

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Completed energy studies Projects: Tete a la Baleine connected to La Tabatiere in 1979. Proposed energy studies 1) Construction of a 21 MW hydro-electric plant at Robertson Lake, 18 km north of La Tabatiere, in 1987 a 25 kv power line to supply La Tabatiere and a 161 kv line, 175 km long, to supply St. Augustin and Blanc Sablon 2) Construction of a 161 kv power line, 442 km long, to supply power from Natashquan to La Tabatiere, St Augustin and Blanc Sablon. Feasibility High 1,2,3 Low 4,5

Tete a la Baleine

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS | **STUDIES AND FEASIBILITY**

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies: Proposed energy efficiency projects
Projects: Energain

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,5,8
Low	1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: LA ROMAINE	Ecoregion: LOWER NORTH SHORE AND ANITCOSTI

1.0 LOCATION

60° 41' W
50° 12' N

Kegaska is 32 miles and Chevery 20 miles.

2.0 TOPOGRAPHY

At the mouth of the La Romaine River draining various lakes.

3.0 CLIMATE

January:	maximum	-7°C
	minimum	-16°C
July:	maximum	15.5°C
	minimum	9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

Not available.

5.0 DEMOGRAPHY

Spoken language: French

1968:	280
1978:	511

6.0 POLITICAL ORGANIZATION

Municipalit. de la Basse-Côte Nord.

Each of the communities has a local committee, composed of a chairman and a maximum of five councillors. Its main purpose is to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Hunting, fishing, tourism.

7.2 Employment

Hunting, fishing.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is canned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family and community gardens and greenhouses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about and the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Aqueduct

11.2 Sanitation

Septic tanks

12.0 TRANSPORTATION

12.1 Air facilities

Seaplane service.

12.2 Road

Not available.

12.3 Water

Wharfs.

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspaper are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

2 nurses, 1 dispensary.

14.2 Social services

Post office.

14.3 Protection

There are no police officers to enforce provincial or municicial regulations.

14.4 Religion

Not available.

15.0 EDUCATION

317 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: LA ROMAINE

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 amps.: 70%
200 amps.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 2 127 510 (D1-0: 2 002 330 D1-1: 125 180)

4.2 commercial: 738 295 (G1-0: 547 015 G1-1: 191 280)

4.3 industrial: None Miscellaneous: 211 539 (T3, 79, 19)

4.4 total: 3 077 344 Subscriptions: 191

5.0 Peak load (kWh): 1 180

5.1 Peak load date: 82-01-18

6.0 Tarification:

D1
23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 30 kwh per day.
3.37¢ per kwh for the remaining consumption.

G1
$6.90 fixed charge per month, plus
$5.25 per kw of power billed in excess of 35 kw, plus
4.5¢ per kwh for the first 9,600 kwh.
2.6¢ per kwh for the remaining consumption.

73 Fixed rate

19 Hydro Quebec building

79 Public lighting

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned. Indian and Northern Affairs responsible for the Indian reserve.

8.0 Annual diesel fuel consumption

1 070 583 litres/3 349 MWH

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.3372¢/litre (82-06-09)

12.0 Distance to nearest grid point

110 km. from Natashquan.

13.0 Year in which grid connection is foreseen

Proposal to construct a line between La Romaine and Natashquan is being studies.

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	4 550	1 180	87-88	8 420	2 090
82-83	5 180	1 345	88-89	9 285	2 255
83-84	5 755	1 460	89-90	10 005	2 430
84-85	6 445	1 600	90-91	10 720	2 550
85-86	7 050	1 750	91-92	11 270	2 680
86-87	7 715	1 915			

15.0 Inventory of building stock

Not available.

16.0 Diesel installations

42043	kW	No of Units
Caterpillar D-398B series 66B-2924	600	3
Caterpillar D-379 series 68B-2550	400	2
Caterpillar D-398 series 68B-4168	600	1

La Romaine

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High 1,2,3,4,5
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Completed energy studies Projects: Cast analysis of construction of a 25 kv power line, 110 km long, between Natashquan and La Romaine as opposed to maintaining diesel-generated power in La Romaine
3. Wind/diesel systems	
4. Wood biomass	
5. Peat biomass	Feasibility
	High 1,2,3
	Low 4,5

La Romaine

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects
Projects: Energain

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,5,8
Low	1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: ST-PAUL'S RIVER　　Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 LOCATION

Nearest towns: Old Fort Bay 9 miles away and Middle Bay 12 miles.

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

January:	maximum	-7°C
	minimum	-16°C
July:	maximum	15.5°C
	minimum	9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

In 1825, the Bonne-Esperance post (St-Paul's River) which had been bought between 1808 and 1820 by N. Lloyd, was sold to John Goddard.

The founding in 1863 of an important cod fishing post by William H. Whiteley on the Ile de Bonne-Esperance in the St.Paul's River archipelago led to the annual migration of a large number of fishermen, several of whom remained in the area. For example, by 1870, the Dunns and the Keats had settled in Salmon Bay and, by 1880, the Roberts, the Tomases and the Spingles in other parts of the archipelago. Most of these fishermen were originally from Conception Bay, Boone Bay and Harbour Grace in Newfoundland.

5.0 DEMOGRAPHY

Spoken language: English

1968: 438
1978: 495

6.0 POLITICAL ORGANIZATION

Each of the communities has a local committee, composed of a chairman and a maximum of five councillors. Its main purpose is to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Hunting, fishing, tourism.

7.2 Employment

Hunting, fishing.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

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9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential and the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Aqueduct.

11.2 Sanitation

Septic tanks.

12.0 TRANSPORTATION

12.1 Air facilities

Seaplane.

12.2 Road

Not available.

12.3 Water

Not available.

13.0 COMMUNICATIONS

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In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

1 dispensary.

14.2 Social services

Not available.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

160 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: St-PAUL'S RIVER

Ecoregion: LOWER NORTH SHORE
AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 1 838 820 (D1-0: 1 583 760 D1-1: 255 060)

4.2 commercial: 233 070 (G1-0: 224 800 G1-1: 8 270)

4.3 industrial: None Miscellaneous: 256 825 (T-3, 79)

4.4 total: 2 328 715

5.0 Peak load (kWh)

5.1 Peak load date: Connected to Lourdes de Blanc Sablon

6.0 Tarification:

D1 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 30 kwh per day.
3.37¢ per kwh for the remaining consumption.

G1 $6.90 fixed charge per month, plus
$5.25 per kwh of power billed in excess of 35 kw, plus
4.5¢ per kwh for the first 9,600 kwh.
2.6¢ per kwh for the remaining consumption.

T3 Fixed rate.

19 Hydro Quebec building

79 Public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Connected to Lourdes de Blanc Sablon.

9.0 Annual heating oil consumption

Included in amount for Blanc Sablon.

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Connected to Lourdes de Blanc Sablon.

13.0 Year in which grid connection is foreseen

See Lourdes de Blanc Sablon

14.0 Projected energy consumption for 1992

See Lourdes de Blanc Sablon.

15.0 Inventory of building stock

Not available.

St-Paul's River

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Projects: Feasibility High Low

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Completed energy studies Projects: Connection of St.Paul's River to Lourdes de Blanc Sablon Proposed energy studies Supply from a 161 kv live from Robertson Lake in 1987, or from Natashquan, which is already connected to Poste Arnaud, Sept Iles, 800 km from Lourdes de Blanc Sablon. Feasibility High 1,2,3 Low

St-Paul's River

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit 2. Insulation retrofit 3. Air envelope retrofit 4. Window/door retrofit 5. Super-efficient norms for new construction 6. Set-back thermostat 7. Hot water heating conservation measures 8. Higher efficiency furnace retrofit 9. Heat pumps 10. Waste heat recovery 11. Energy conservation education	Studies: Proposed energy efficiency projects Projects: Energain Feasibility High 1,2,3,4,5,6,7,8,10,11 Low 9
REPLACEMNT OPTIONS	
1. Connection to main grid 2. Rate structure change for oil based electrical heating 3. Cogeneration 4. District heating 5. Wind systems 6. Wood systems 7. Peat systems 8. Active solar	Studies: Projects: Feasibility High 2,5,8 Low 1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: HARRINGTON HARBOUR

Ecoregion: LOWER NORTH SHORE AND ANITCOSTI

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

January: maximum -7°C
minimum -16°C

July: maximum 15.5°C
minimum 9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

Benjamin Simms and John Chislett, who were originally from Fortune Bay, founded Harrington Harbour on October 13, 1871, settling on what is now Ile de l'Hopital.

5.0 DEMOGRAPHY

Spoken language: English

1968: 521
1978: 311

6.0 POLITICAL ORGANIZATION

Each of the 15 communities has a local committee, composed of a chairman and a maximum of five councillors, who are elected for a three-year period. The role of the local committee is mainly to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

7.2 Employment

Hunting and fishing.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is canned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family and community gardens and greenhouses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential and the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Not available.

11.2 Sanitation

12.0 TRANSPORTATION

12.1 Air facilities

12.2 Road

Not available.

12.3 Water

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspapers are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

1 hospital (16 beds), 2 nurses, 1 dispensaire.

14.2 Social services

Post office, Soeurs de la Ste-Famille.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

81 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: HARRINGTON HARBOUR
Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 913 370 (D1-0)

4.2 commercial: 1 405 200 (G1-0)

4.3 industrial: None   Miscellaneous: 249 397 (T3, 79)

4.4 total: 1 654 597

5.0 Peak load (kWh)

5.1 Peak load date: Connected to La Tabatiere

6.0 Tarification:

D1	23.0¢ fixed charge per day, plus 2.7¢ per kwh for the first 30 kwh per day. 3.37¢ per kwh for the remaining consumption.
G1	$6.90 fixed charge per month, plus $5.25 per kw of power billed in excess of 35 kw, plus 4.5¢ per kwh for the first 9,600 kwh. 2.6¢ per kwh for the remaining consumption.
T3	Fixed rate
19	Hydro Quebec building
79	Public lighting

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Connected to La Tabatiere

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Harrington generating station closed. Connected to La Tabatiere in 1979.

13.0 Year in which grid connection is foreseen

See La Tabatiere.

14.0 Projected energy consumption for 1992

See La Tabatiere.

15.0 Inventory of building stock

Not available.

Harrington Harbour

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Projects: Feasibility High 1,2,3,4,5 Low

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Completed energy studies Projects: Harrington plant closed and village connected to La Tabatiere in 1979. Proposed energy studies 1) Construction of a 21 MW hydro-electric plant at Robertson Lake, 18 km north of la Tabatiere, in 1987, a 25 kv power line to supply La Tabatiere and a 161 kv line, 175 km long, to supply St Augustin and Blanc Sablon. 2) Construction of a 161 kv power line, 442 km long, to supply power from Natashquan to La Tabatiere St Augustin and Blanc Sablon. Feasibility High 1,2,3 Low 4,5

Harrington Harbour

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects
Projects: Energain

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,5,8
Low	1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: LA TABATIERE

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 LOCATION

58° 57' W
50° 50' N

2.0 TOPOGRAPHY

3.0 CLIMATE

January: maximum -7°C
minimum -16°C

July: maximum 15.5°C
minimum 9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

In 1821, the La Tabatiere post, one of the best for seal hunting, was handed over by the Labrador Company to one of its employees, Samuel Robertson, who had come from Scotland 20 years ealier.

The French Canadian and Acadian families were joined by a few natives of Jersey, such as the Gallichons, who settled in La Tabatiere.

1870-1885.

Several young Newfoundland families came to live in La Tabatiere.

5.0 DEMOGRAPHY

Spoken language: English

1968: 406
1978: 526

6.0 POLITICAL ORGANIZATION

Each of the 15 communities has a local committee, composed of a chairman and a maximum of five councillors, who are elected for a three-year period. The role of the local committee is mainly to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Fishing, hunting, tourism.

7.2 Employment

Fishing, hunting.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by ar the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is canned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family and community gardens and greenhouses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential and the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

11.2 Sanitation

12.0 TRANSPORTATION

12.1 Air facilities

12.2 Road

Not available.

12.3 Water

13.0 COMMUNICATIONS

With the advent of micro-wave relay in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspapers are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

14.2 Social services

Les Oblats de Marie Immaculee, Post Office.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

144 students

Vocational and continuing education.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: LA TABATIERE
Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 1 951 480 (D1-0: 746 810 D1-1: 1 204 670)

4.2 commercial: 1 010 340 (G1-0: 970 450 G1-1: 39 890)

4.3 industrial: None Miscellaneous: 43 097 (T3, 79, 19)

4.4 total: 3 004 917 Subscriptions: 574

5.0 Peak load (kWh): 2860

5.1 Peak load date: 82-01-18

6.0 Tarification:

D1
23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 30 kwh per day.
3.37¢ per kwh for the remaining consumption.

G1
$6.90 fixed charge per month, plus
$5.25 per kw of power billed in excess of 35 kw, plus
4.5¢ per kwh for the first 9,600 kwh.
2.6¢ per kwh for the remaining consumption.

T3 Fixed rate

19 Hydro Quebec building

79 Public lighting

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

3 254 027 litres/10 642 mwh

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

H.Q. .3372¢/litres (82-06-09)

12.0 Distance to nearest grid point

267 km. from Natashquan

13.0 Year in which grid connection is foreseen

1) Construction of a 21 MW hydro-electric plant in Lac Robertson, 18 km north of La Tabatiere, in 1987, a 25 kv power line to supply La Tabatiere and a 161 kv power line, 175 km long, to supply St Augustin and Blanc Sablon.

2) Construction of a 161 kv power line, 442 km long, to supply power from Natashquan to La Tabatiere, St Augustin and Blanc Sablon.

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	11 275	2 860	86-87	22 810	5 660
82-83	13 800	3 500	87-88	24 120	5 985
83-84	15 535	3 890	88-89	24 500	6 080
84-85	16 990	4 310	89-90	26 740	6 495
85-86	19 825	4 920	90-91	28 080	6 820
			91-92	29 490	7 160

15.0 Inventory of building stock

Not available.

16.0 Diesel installations

42045	kW	No of Units
Caterpillar D-379 series 68B-2309	400	4
Caterpillar D-399 series 35B-1261	800	1
Caterpillar D-399 series 35B-2989	800	2
Caterpillar D-399 series 35B-2990	800	3
Caterpillar D-399 series 35B-4790	800	5
Caterpillar D-399 series 35B-4798	800	6

La Tabatiere

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies: Proposed energy studies
Projects: 1) Construction of a 21 MW hydro electric plant at Robertson Lake, 18 km north of La Tabatiere, in 1987, a 25 kv power line to supply La Tabatiere and a 161 kv line, 175 km long, to supply St Augustin and Blanc Sablon.
2) Construction of 161 kv power line, 442 km long, to supply power from Natashquan to La Tabatiere St Augustin and Blanc Sablon

Feasibility
High 1,2,3

Low 4,5

La Tabatiere

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects

Projects: Energain

Feasibility

High 1,2,3,4,5,6,7,8,10,11

Low 9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:

Projects:

Feasibility

High 2,5,8

Low 1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: BRADORE BAY	Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 LOCATION

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

January: maximum -7°C
minimum -16°C

July: maximum 15.5°C
minimum 9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

The Brador post, founded in 1706 by the Courtemanche, was sold soon after 1820 to Captain Randall Jones, who was originally from England and had lived for a few years in Halifax.

Arrival of the French-canadians (1830-1855). Some families settled in the Bradore area.

5.0 DEMOGRAPHY

Spoken language: English

1968: 115
1978: 123

6.0 POLITICAL ORGANIZATION

Each of the 15 communities has a local committee, composed of a chairman and a maximum of five councillors, who are elected for a three-year period. The role of the local committee is mainly to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Fishing, hunting, tourism.

7.2 Employment

Fishing, hunting.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is canned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family and community gardens and greenhouses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Aqueduct and well points.

11.2 Sanitation

Septic tanks.

12.0 TRANSPORTATION

12.1 Air facilities

Not available.

12.2 Road

Not available.

12.3 Water

Not available.

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspapers are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

Not available.

14.2 Social services

Not available.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

31 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: BRADORE BAY

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 618 580 (D1-0: 445,260 D1-1: 173 320)

4.2 commercial: 210 640 (G1-0: 202 870 G1-1:

4.3 industrial: None Miscellaneous: 12 380 (79)

4.4 total: 841 600

5.0 Peak load (kWh)

5.1 Peak load date: Connected to Lourdes de Blanc Sablon

6.0 Tarification:

D1	23.0¢	fixed charge per day, plus
	2.7¢	per kwh for the first 30 kwh per day.
	3.37¢	per kwh for the remaining consumption.
G1	$6.90	fixed charge per month, plus
	$5.25	per kw of power billed in excess of 35 kw, plus
	4.5¢	per kwh for the first 9,600 kwh.
	2.6¢	per kwh for the remaining consumption.
T3	Fixed rate	
19	Hydro Quebec building	
79	Public lighting	

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Connected to Lourdes de Blanc Sablon.

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Connected to Lourdes de Blanc Sablon.

13.0 Year in which grid connection is foreseen

See Lourdes de Blanc Sablon.

14.0 Projected energy consumption for 1992

See Lourdes de Blanc Sablon.

15.0 Inventory of building stock

Not available.

Bradore Bay

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High 1,2,3,4,5
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Completed energy studies Projects: Bradore Bay connected to Lourdes de Blanc Sablon. Proposed energy studies Supply from a 161 kv line from Robertson Lake in 1987, or from Natashquan, which is already connected to Poste Arnaud, Sept Iles, 800 km from Lourdes de Blanc Sablon.
3. Wind/diesel systems	
4. Wood biomass	
5. Peat biomass	
	Feasibility
	High 1,2,3
	Low 4,5

Bradore Bay

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects
Projects: Energain

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,5,8
Low	1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: AYLMER SOUND

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

4.0 HISTORY

5.0 DEMOGRAPHY

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

7.1 Major activities

7.2 Employment

7.3 Occupational skills

7.4 Tourism

8.0 RENEWABLE RESOURCES

9.0 NON RENEWABLE RESOURCES

10.0 PRICES AND INCOME

11.0 INFRASTRUCTURE

11.1 Water

11.2 Sanitation

12.0 TRANSPORTATION

12.1 Air facilities

12.2 Road

12.3 Water

13.0 COMMUNICATIONS

14.0 SOCIAL SERVICES

14.1 Medical

14.2 Social services

14.3 Protection

14.4 Religion

15.0 EDUCATION

16.0 BASIC NEEDS

ENERGY PROFILE

Community: AYLMER SOUND

Ecoregion: LOWER NORTH SHORE
AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DIMA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 316 190 (D1-0)

4.2 commercial: 10 510 (G1-0)

4.3 industrial: None Miscellaneous: 16 526 (T3,79)

4.4 total: 343 226

5.0 Peak load (kWh)

5.1 Peak load date: Connected to La Tabatiere.

6.0 Tarification:

D1
23.0¢ Fixed charge per day, plus
2.7¢ per kwh for the first 30 kwh per day.
3.37¢ per kwh for the remaining consumption.

G1
$6.90 fixed charge per month, plus
$5.25 per kw of power billed in excess of 35 kw, plus
4.5¢ per kwh for the first 9,600 kwh.
2.6¢ per kwh for the remaining consumption.

T3 Fixed rate.

19 Hydro Quebec building

79 Public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Connected to La Tabatiere.

9.0 Annual heating oil consumption

Connected to La Tabatiere.

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Connected to La Tabatiere in 1979.

13.0 Year in which grid connection is foreseen

See La Tabatiere.

14.0 Projected energy consumption for 1992

See La Tabatiere.

15.0 Inventory of building stock

Not available.

Aylmer Sound

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Projects: Feasibility High Low

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Completed energy studies Projects: Aylmer Sound connected to La Tabatiere in 1979. Proposed energy studies 1) Construction of a 21 MW hydro-electric plant at Robertson Lake, 18 km north of La Tabatiere, in 1987, a 25 kv power line to supply La Tabatiere and a 161 kv line, 175 km long, to supply St. Augustin and Blanc Sablon 2) Construction of a 161 kv power line, 442 km long, to supply power from Natashquan to La Tabatiere, St Augustin and Blanc Sablon. Feasibility High 1,2,3 Low 4,5

Aylmer Sound

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit 2. Insulation retrofit 3. Air envelope retrofit 4. Window/door retrofit 5. Super-efficient norms for new construction 6. Set-back thermostat 7. Hot water heating conservation measures 8. Higher efficiency furnace retrofit 9. Heat pumps 10. Waste heat recovery 11. Energy conservation education	Studies: Proposed energy efficiency projects Projects: Energain Feasibility High 1,2,3,4,5,6,7,8,10,11 Low 9

REPLACEMNT OPTIONS	
1. Connection to main grid 2. Rate structure change for oil based electrical heating 3. Cogeneration 4. District heating 5. Wind systems 6. Wood systems 7. Peat systems 8. Active solar	Studies: Projects: Feasibility High 2,5,8 Low 1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: MIDDLE BAY

Ecoregion: LOWER NORTH SHORE
AND ANTICOSTI

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

January:	maximum	-7°C
	minimum	-16°C
July:	maximum	15.5°C
	minimum	9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

Not available.

5.0 DEMOGRAPHY

Spoken language: English.

1968: 147
1978: 143

6.0 POLITICAL ORGANIZATION

Each of the 15 communities has a local committee, composed of a chairman and a maximum of five councillors, who are elected for a three-year period. The role of the local committee is mainly to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Hunting, fishing, tourism.

7.2 Employment

Hunting, fishing, tourism.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is canned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family and community gardens and greenhouses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential and the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Well points.

11.2 Sanitation

Septic tanks and

12.0 TRANSPORTATION

12.1 Air facilities

Not available.

12.2 Road

Not available.

12.3 Water

Not available.

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspapers are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

Not available.

14.2 Social services

Post office.

14.3 Protection

Not available.

14.4 Religion

Not available.

15.0 EDUCATION

29 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: MIDDLE BAY

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.:
200 A.:

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 357 990 (D1-0)

4.2 commercial: 92 190 (G1-0)

4.3 industrial: None Miscellaneous: 57 079 (T-3, 79)

4.4 total: 507 259

5.0 Peak load (kWh)

5.1 Peak load date: Connected to Lourdes de Blanc Sablon

6.0 Tarification:

D1	23.0¢ fixed charge per day, plus 2.7¢ per kwh for the first 30 kwh per day. 3.37¢ per kwh for the remaining consumption.
G1	$6.90 fixed charge per month, plus $5.25 per kw of power billed in excess of 35 kw, plus 4.5¢ per kwh for the first 9,600 kwh. 2.6¢ per kwh for the remaining consumption.
T3	Fixed rate
19	Hydro Quebec building
79	Public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Connected to Lourdes de Blanc Sablon.

9.0 Annual heating oil consumption

Connected to Lourdes de Blanc Sablon.

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel

11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Middle Bay connected to Lourdes de Blanc Sablon.

13.0 Year in which grid connection is foreseen

See Lourdes de Blanc Sablon

14.0 Projected energy consumption for 1992

See Lourdes de Blanc Sablon.

15.0 Inventory of building stock

Not available.

Middle Bay

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Projects: Feasibility High 1,2,3,4,5 Low

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Completed energy studies Projects: Connection of St-Paul's River to Lourdes de Blanc Sablon Proposed energy studies Supply from a 161 kv line from Robertson Lake in 1981, or from Natashquan, which is already connected to Poste Arnaud, Sept Iles, 800 km from Lourdes de Blanc Sablon. Feasibility High 1,2,3 Low 4,5

Middle Bay

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit	Studies: Proposed energy efficiency projects
2. Insulation retrofit	Projects: Energain
3. Air envelope retrofit	
4. Window/door retrofit	
5. Super-efficient norms for new construction	
6. Set-back thermostat	
7. Hot water heating conservation measures	
8. Higher efficiency furnace retrofit	Feasibility
	High 1,2,3,4,5,6,7,8,10,11
9. Heat pumps	Low 9
10. Waste heat recovery	
11. Energy conservation education	

REPLACEMNT OPTIONS	
1. Connection to main grid	Studies:
2. Rate structure change for oil based electrical heating	Projects:
3. Cogeneration	
4. District heating	
5. Wind systems	
6. Wood systems	Feasibility
7. Peat systems	High 2,5,8
8. Active solar	Low 1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: LOURDES DE BLANC SABLON **Ecoregion:** LOWER NORTH SHORE AND ANTICOSTI

1.0 LOCATION

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

January: maximum -7°C
minimum -16°C

July: maximum 15.5°C
minimum 9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

In 1834, Charles Dickers established the Longue-Pointe du Blanc-Sablon post (now Lourdes de Blanc Sablon).

Language patterns began to change, with English becoming the predominant language by the end of the century. English was spoken at Kegashka, Harrington Harbour, Mutton Bay, Old Fort, St.Paul's River and Brador, and French was the predominant language at La Romaine, Tete-a-la-Baleine and Longue-Pointe de Blanc Sablon.

5.0 DEMOGRAPHY

Spoken language: English

1968: 538
1978: 625

6.0 POLITICAL ORGANIZATION

Each of the 15 communities has a local committee, composed of a chairman and a maximum of five councillors, who are elected for a three-year period. The role of the local committee is mainly to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Fishing, hunting, tourism.

7.2 Employment

Fishing, hunting.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is conned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family and community gardens and greenhouses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential and the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Lake, aqueduct and well points.

11.2 Sanitation

Septic tanks. Improvements are needed to garbage and sewage disposal services.

12.0 TRANSPORTATION

12.1 Air facilities

Seaplane, airstrip.

12.2 Road

Snowmobile.

12.3 Water

Not available.

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities apart from Kegashka F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspapers are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channes to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

At the present time, there are four doctors working in the region; all four are general practitioners based at the Lourdes de Blanc Sablon hospital.

Patients requiring emergency treatment are immediately transported by plane to the Lourdes-de-Blanc Sablon hospital except in cases that obviously call for highly qualified treatment in large centres like Quebec City or Montreal.

As mentioned above, the doctors at the Lourdes de Blanc Sablon hospital are general practitioners. Even though the hopsital is equipped with a surgery block, it is practically impossible under present conditions to recruit surgeons, anesthetists or other specialists.

14.2 Social services

Post office.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

236 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: LOURDES DE BLANC SABLON Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 3 485 310 (D1-0: 2 751 780 D1-1: 733 530)

4.2 commercial: 2 121 820 (G1-0: 1 672 230 G1-1: 449 590)

4.3 industrial: None Miscellaneous: 601

4.4 total: 5 848 003 Subscriptions: 601

5.0 Peak load (kWh): 3 690

5.1 Peak load date: 82-01-18

6.0 Tarification:

D1 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 30 kwh per day.
3.37¢ per kwh for the remaining consumption.

G1 $6.90 fixed charge per month, plus
$5.25 per kw of power billed in excess of 35 kw, plus
4.5¢ per kwh for the first 9,600 kwh.
2.6¢ per kwh for the remaining consumption.

T3 Fixed rate

19 Hydro Quebec building

79 Public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

4 230 053 litres/13 857 Mwh

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.3372¢/litre 82-06-09

12.0 Distance to nearest grid point

442 km. from Natashquan

13.0 Year in which grid connection is foreseen

Supply from a 161 kv line from Lac Robertson in 1987, or from Natashquan, wich is already connected to Poste Arnaud, Sept Iles, 800 km from Lourdes de Blanc Sablon.

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	14 220	3 690	88-89	30 140	7 480
82-83	17 345	4 400	89-90	32 815	7 970
83-84	19 175	4 865	90-91	34 460	8 370
84-85	21 170	5 370	91-92	36 190	8 790
85-86	23 615	5 860			
86-87	25 730	6 385			
87-88	28 005	6 950			

15.0 Inventory of building stock

Not available.

Lourdes de
Blanc Sablon

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies: Completed energy studies
Projects: Study on a small hydro-electric plant on the Brador River.
Proposed energy studies
Supply from a 161 kv line from Robertson Lake in 1987, or from Natashquan, which is already connected to Poste Arnaud, Sept Iles, 800 km from Lourdes de Blanc Sablon.

Feasibility

High 1,2,3

Low 4,5

Lourdes de
Blanc Sablon

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects
Projects: Energain

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,5,8
Low	1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: BLANC SABLON

Ecoregion: LOWER NORTH SHORE
AND ANTICOSTI

1.0 LOCATION

51° 25' N
57° 12' W

The nearest communities are l'Anse au Clair, seven miles away by helicopter, and Baie-de-Forteau, 13 miles away by helicopter.

2.0 TOPOGRAPHY

Elevation of 300 ft.

3.0 CLIMATE

January:	maximum	-7°C
	minimum	-16°C
July:	maximum	15.5°C
	minimum	9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of MontreaL.

4.0 HISTORY

Between 1817 and 1822, Martin Parent founded the Blanc Sablon posts, not very far from Brador.

Between 1830 and 1855, several dozen French Canadian families came from Quebec City to settle in Canadian Labrador, as the Lower North Shore was known at this time.

The French Canadian and Acadian families were joined by a few natives of Jersey, such as the LeTempliers, who settled in Blanc Sablon.

5.0 DEMOGRAPHY

Spoken language: English

1968:	315
1978:	361

6.0 POLITICAL ORGANIZATION

Each of the 15 communities has a local committee, composed of a chairman and a maximum of five councillors, who are elected for a three-year period. The role of the local committee is mainly to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Fishing, hunting, tourism.

7.2 Employment

Fishing, hunting.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is canned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family and community gardens and greenhouses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Lake. Water is distributed by fire truck.

11.2 Sanitation

Improvements are needed to garbage and sewage disposal services.

12.0 TRANSPORTATION

12.1 Air facilities

Airport.

12.2 Road

Main road and streets.

12.3 Water

Agence Maritime Inc. serves Blanc Sablon's port.

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspapers are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school commission.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

There is one hospital in Lourdes de Blanc Sablon.

The closest hospital offering good services is in Saint Anthony, Newfoundland, 113 kilometres away.

14.2 Social services

Post office.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

130 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: BLANC SABLON

Ecoregion: LOWER NORTH SHORE
AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 1 436 660 (D1-0: 562 860 D1-1: 873 800)

4.2 commercial: 657 980 (G1-0: 378 150 G1-1: 279 830)

4.3 industrial: None Miscellaneous: 22 284 (79)

4.4 total: 2 116 924

5.0 Peak load (kWh)

5.1 Peak load date: Connected to Lourdes de Blanc Sablon.

6.0 Tarification:

D1 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 30 kwh per day.
3.37¢ per kwh for the remaining consumption.

G1 $6.90 fixed charge per month, plus
$5.25 per kw of power billed in excess of 35 kw, plus
4.5¢ per kwh for the first 9,600 kwh.
2.6¢ per kwh for the remaining consumption.

T3 Fixed rate

19 Hydro Quebec building

79 Public lighting

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Connected to Lourdes de Blanc Sablon.

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Blanc Sablon is connected to Lourdes de Blanc Sablon.

13.0 Year in which grid connection is foreseen

See Lourdes de Blanc Sablon.

14.0 Projected energy consumption for 1992

See Lourdes de Blanc Sablon.

15.0 Inventory of building stock

Not available.

16.0 Diesel installations

42083	kW	No of Units
G.M. 12-567 ATLP series N-1692	600	8
Caterpillar D-399 series 35B-640	800	3
Caterpillar D-399 series 35B-974	800	2
Caterpillar D-399 series 35B-1074	800	4
Caterpillar D-399 series 35B-1336	800	1
Caterpillar D-399 series 35B-4789	800	5
Caterpillar D-399 series 35B-4776	800	6
Caterpillar D-399 series 35B-1294	800	7

Blanc Sablon

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies: Completed energy studies
Projects: Blanc Sablon is connected to Lourdes de Blanc Sablon.
Proposed energy studies
Supply from a 161 kv line from Robertson Lake in 1987, or from Natashquan, which is already connected to Poste Arnaud, Sept Iles, 800 km from Lourdes de Blanc Sablon.

Feasibility

High 1,2,3

Low 4,5

Blanc Sablon

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit 2. Insulation retrofit 3. Air envelope retrofit 4. Window/door retrofit 5. Super-efficient norms for new construction 6. Set-back thermostat 7. Hot water heating conservation measures 8. Higher efficiency furnace retrofit 9. Heat pumps 10. Waste heat recovery 11. Energy conservation education	Studies: Proposed energy efficiency projects Projects: Energain Feasibility High 1,2,3,4,5,6,7,8,10,11 Low 9
REPLACEMNT OPTIONS	
1. Connection to main grid 2. Rate structure change for oil based electrical heating 3. Cogeneration 4. District heating 5. Wind systems 6. Wood systems 7. Peat systems 8. Active solar	Studies: Projects: Feasibility High 2,5,8 Low 1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: ST-AUGUSTIN

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

January:	maximum	-7°C
	minimum	-16°C
July:	maximum	15.5°C
	minimum	9.5°C

The climate is of the cold maritime type: cool summers moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

In 1823, Saint-Augustin archipelago post was bought by two brothers, Andrew and Matthew Kennedy, who had arrived on the shore long before 1820. Not only did they obtain the rights to hunt seal, but also to fish salmon in the archipelago as well as at ten other stations administered by Matthew.

5.0 DEMOGRAPHY

Spoken language: English

1968: 784
1978: 950 White, French
109 Indiens, French.

6.0 POLITICAL ORGANIZATION

Each of the 15 communities has a local committee, composed of a chairman and a maximum of five councillors, who are elected for a three-year period. The role of the local committee is mainly to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Fishing, hunting, tourism.

7.2 Employment

Fishing, hunting.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is canned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family or community gardens and greenhouses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential and the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Lake, river.

11.2 Sanitation

Septic tanks.

12.0 TRANSPORTATION

12.1 Air facilities

Airport.

12.2 Road

Not available.

12.3 Water

Ships of the Agence Maritime Inc. serve St. Augustin's port.

13.0 COMMUNICATIONS

With the advent of microwave relays in December 1978, all communities get good F.M. reception both in English and French, except Kegashka, which doesn't get anything and Tete-a-la-Baleine and La Romaine which, for reasons unknown, don't receive the English CBC signal. The micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT (French).

Because of transport problems, the large daily newspapers are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

Nursing station and one nurse.

14.2 Social services

Post office.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

Students: 280 Whites
23 Indians.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: ST-AUGUSTIN

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 3 405 100 (D1-0: 1 867 480 D1-1: 1 537 620)

4.2 commercial: 993 720 (G1-0: 634 460 G1-1: 359 260)

4.3 industrial: None Miscellaneous: 280 847 (T3, 79)

4.4 total: 4 679 667 Subscriptions: 237

5.0 Peak load (kWh): 1 400

5.1 Peak load date: 82-01-18

6.0 Tarification:

D1
23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 30 kwh per day.
3.37¢ per kwh for the remaining consumption.

G1
$6.90 fixed charge per month, plus
$5.25 per kw of power billed in excess of 35 kw, plus
4.5¢ per kwh for the first 9,600 kwh.
2.6¢ per kwh for the remaining consumption.

T3 Fixed rate

19 Hydro Quebec building

79 Public lighting

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned. Department of Indian and Northern Affairs for Indian consumption.

8.0 Annual diesel fuel consumption

1 481 551 litres/4 740 mwh.

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

.3432¢/litre (82-06-09)

12.0 Distance to nearest grid point

None

13.0 Year in which grid connection is foreseen

Supply from a 161 kv line from Robertson Lake in 1987, or from Natashquan, which is already connected to Poste Arnaud, Sept Iles.

14.0 Projected energy consumption for 1992

YEAR	MHW	KW	YEAR	MHW	KW
81-82	5 150	1 400	87-88	9 905	2 630
82-83	5 815	1 580	88-89	10 735	2 850
83-84	6 510	1 770	89-90	11 795	3 060
84-85	7 265	1 975	90-91	12 390	3 215
85-86	8 210	2 180	91-92	13 010	3 375
86-87	9 020	2 395			

15.0 Inventory of building stock

Not available.

16.0 Diesel installations

42046	kW	No of Units
Caterpillar D-379 series 68B-2138	400	3
Caterpillar D-379 series 68B-2551	400	1
Caterpillar D-398 series 66B-4129	600	2
Caterpillar D-399 series 35B-4774	800	4
Caterpillar D-399 series 35B-4778	800	5

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High 1,2,3,4,5
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid	
	Studies: Proposed energy studies
2. Mini hydro	Projects: Supply from a 161 kv line from Robertson Lake in 1987, or from Natashquan, which is already connected to Poste Arnaud, Sept Iles.
3. Wind/diesel systems	
4. Wood biomass	
	Feasibility
5. Peat biomass	High 1,2,3
	Low 4,5

St-Augustin

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies: Proposed energy efficiency projects

Projects: Energain

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:

Projects:

Feasibility

High	2,5,8
Low	1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: MUTTON BAY

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

January: maximum -7°C
minimum -16°C

July: maximum 15.5°C
minimum 9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

About 1873 a group of Newfoundlanders, the Galliots, the Browns, the Buffets and the Dubbons, came to join their compatriots, the Mansbridges and the Griffins and the families of George Organ, Thomas Benjamin Green, George Styles and John Yarn, who had founded the village of Mutton Bay.

5.0 DEMOGRAPHY

Spoken language: English

1868: 261
1978: 260

6.0 POLITICAL ORGANIZATION

Each of the 15 communities has a local committee, composed of a chairman and a maximum of five councillors, who are elected for a three-year period. The role of the local committee is mainly to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Fishing, hunting, tourism.

7.2 Employment

Fishing, hunting.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

Some seven to eight thousand seals are harvested annually. The skins are sold rough and prepared outside the region. Some meat is canned for local consumption.

Commercial forests are limited in acreage and supply local service sawmills. As for agriculture, scarcity of good soils and climatic conditions preclude any large-scale commercial development. However, chickens and pigs are raised for local consumption, and family or community gardens and greenhouses supply sufficient quantities of certain fresh produce to meet local needs.

9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Lake.

11.2 Sanitation

12.0 TRANSPORTATION

12.1 Air facilities

Seaplanes.

12.2 Road

Snowmobile.

12.3 Water

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspapers are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

1 nursing station, 1 nurse.

14.2 Social services

Post office.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

63 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: MUTTON BAY

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 886 490 (D1-0)

4.2 commercial: 79 790 (G1-0)

4.3 industrial: None Miscellaneous: 238 255 (T3, 79)

4.4 total: 1 204 535

5.0 Peak load (kWh): Supply by La Tabatiere

5.1 Peak load date:

6.0 Tarification:

D1	23.0¢ fixed charge per day, plus 2.7¢ per kwh for the first 30 kwh per day. 3.37¢ per kwh for the remaining consumption.
G1	$6.90 fixed charge per month, plus $5.25 per kw of power billed in excess of 35 kw, plus 4.5¢ per kwh for the first 9,600 kwh. 2.6¢ per kwh for the remaining consumption
T3	Fixed rate
19	Hydro Quebec building
79	Public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Connected to La Tabatiere.

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Mutton Bay connected to La Tabatiere since 1965.

13.0 Year in which grid connection is foreseen

See La Tabatiere.

14.0 Projected energy consumption for 1992

See La Tabatiere.

15.0 Inventory of building stock

Not available.

Mutton Bay

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies: Completed energy studies
Projects: Mutton Bay connected to La Tabatiere since 1965.

Proposed energy studies

1) Construction of a 21 Mw hydro-electric plant at Robertson Lake, 18 km north of La Tabatiere, in 1987, a 25 kv power line to supply La Tabatiere and a 161 kv line, 175 km long, to supply St Augustin and Blanc Sablon.
2) Construction of a 161 kv power line, 442 km long, to supply power from Natashquan to La Tabatiere, St Augustin and Blanc Sablon.

Feasibility

High 1,2,3,

Low 4,5

Mutton Bay

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects

Projects: Energain

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:

Projects:

Feasibility

High	2,5,8
Low	1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: OLD FORT BAY

Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 LOCATION

51° 14' N
58° 39' W

2.0 TOPOGRAPHY

3.0 CLIMATE

January:	maximum	-7°C
	minimum	-16°C
July:	maximum	15.5°C
	minimum	9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winters, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

Not available.

5.0 DEMOGRAPHY

Spoken language: English

1968:	276
1978:	312

6.0 POLITICAL ORGANIZATION

Each of the communities has a local committee, composed of a chairman and a maximum of five councillors. Its main purpose is to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Fishing, hunting, tourism.

7.2 Employment

Fishing, hunting.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

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9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Well points, aqueduct.

11.2 Sanitation

Septic tanks.

12.0 TRANSPORTATION

12.1 Air facilities

Seaplanes.

12.2 Road

Snowmobile.

12.3 Water

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspaper are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

Not available.

14.2 Social services

Post office.

14.3 Protection

Not available.

14.4 Religion

Not available.

15.0 EDUCATION

91 students.

16.0 BASIC NEEDS

Unknown

ENERGY PROFILE

Community: OLD FORT BAY
Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 1 026 660 (D1-0: 1 012 150 D1-1: 14 510)

4.2 commercial: 134 090 (G1-0: 67 970 G1-1: 66 120)

4.3 industrial: None Miscellaneous: 8 414 (79)

4.4 total: 1 169 164

5.0 Peak load (kWh)

5.1 Peak load date: Connected to Lourdes de Blanc Sablon.

6.0 Tarification:

D1	23.0¢ fixed charge per day, plus 2.7¢ per kwh for the first 30 kwh per day. 3.37¢ per kwh for the remaining consumption.
G1	$6.90 fixed charge per month, plus $5.25 per kw of power billed in excess of 35 kw, plus 4.5¢ per kwh for the first 9,600 kwh. 2.6¢ per kwh for the remaining consumption.
T3	Fixed rate
19	Hydro Quebec building
79	Public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Connected to Lourdes de Blanc Sablon.

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Old Fort Bay connected to Lourdes de Blanc Sablon.

13.0 Year in which grid connection is foreseen

See Lourdes de Blanc Sablon.

14.0 Projected energy consumption for 1992

See Lourdes de Blanc Sablon.

15.0 Inventory of building stock

Not available.

Old Fort Bay ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
	Feasibility
4. Energy efficient electrical appliances and lighting	High 1,2,3,4,5
5. Time of use measures	Low
REPLACEMENT OPTIONS	
1. Connection to main grid	
2. Mini hydro	Studies: Completed energy studies Projects: Old Fort Bay connected to Lourdes de Blanc Sablon.
3. Wind/diesel systems	Proposed energy studies
4. Wood biomass	Supply from a 161 kv line from Robertson Lake in 1987, or from Natashquan, which is already connected to Poste Arnaud, Sept Iles, 800 km from Lourdes de Blanc Sablon.
5. Peat biomass	
	Feasibility
	High 1,2,3
	Low 4,5

Old Fort Bay

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects
Projects: Energain

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,5,8
Low	1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: CHEVERY

Ecoregion: LOWER NORTH SHORE
AND ANTICOSTI

1.0 LOCATION

2.0 TOPOGRAPHY

3.0 CLIMATE

January: maximum -7°C
minimum -16°C

July: maximum 15.5°C
minimum 9.5°C

The climate is of the cold maritime type: cool summers, moderately cold winter, frequent fog, high winds and heavy snowfall. The latter is twice as heavy as in Montreal and the needs for house heating are 50% higher. The growing season is only two thirds that of Montreal.

4.0 HISTORY

Not available.

5.0 DEMOGRAPHY

Spoken language: English

1978: 228

6.0 POLITICAL ORGANIZATION

Each of the communities has a local committee, composed of a chairman and a maximum of five councillors. Its main purpose is to represent the villagers in dealings with the municipality and other administrative bodies.

7.0 ECONOMY

7.1 Major activities

Fishing, hunting, tourism.

7.2 Employment

Fishing, hunting.

7.3 Occupational skills

Not available.

7.4 Tourism

The area has an exceptional tourist economy for two main reasons: hunting and recreational fishing and a beautiful natural environment.

8.0 RENEWABLE RESOURCES

As far as resources are concerned, it is on the Lower North Shore that one finds the greatest diversity of species. In volume, cod is by far the most abundant species harvested - about 8 000 000 pounds per year. About one third of this cod is sold frozen and two thirds salted, the latter through the Canadian Salt Fish Corporation based in Newfoundland.

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9.0 NON RENEWABLE RESOURCES

There are few economically important resources being tapped. Little is known about mining potential and the hydro-electric potential is being considered for development before the end of the century.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Aqueduct, well points.

11.2 Sanitation

Septic tanks.

12.0 TRANSPORTATION

12.1 Air facilities

Airport, seaplanes.

12.2 Road

Not available.

12.3 Water

13.0 COMMUNICATIONS

With the advent of micro-wave relays in December 1978, all communities get good F.M. reception both in English and French. The same micro-wave relays have brought in good T.V. reception of two stations: CBC Montreal (English) and CBGAT Matane (French).

Because of transport problems, the large daily newspaper are delivered on the Lower North Shore with delays of a week or more, so that not many people are interested in subscribing to them. Locally, there is a bilingual bimonthly called "Le Sextant", which is published and distributed free by the regional school board.

In conclusion, as far as communications are concerned, it seems that T.V. and F.M. radio should be considered as the best channels to get news quickly to and from each community. Written media can't do the job because of transport problems.

14.0 SOCIAL SERVICES

14.1 Medical

Not available.

14.2 Social services

Post office.

14.3 Protection

There are no police officers to enforce provincial or municipal regulations.

14.4 Religion

Not available.

15.0 EDUCATION

32 students.

16.0 BASIC NEEDS

Unknown.

ENERGY PROFILE

Community: CHEVERY

Ecoregion: LOWER NORTH SHORE
AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

100 A.: 70%
200 A.: 30%

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 1 022 750 (D1-0)

4.2 commercial: 440 020 (G1-0: 307 530 G1-1: 132 490)

4.3 industrial: None Miscellaneous: 211 504 (19-79)

4.4 total: 1 674 274

5.0 Peak load (kWh)

5.1 Peak load date: Connected to La Tabatiere

6.0 Tarification: D1 23.0¢ fixed charge per day, plus
2.7¢ per kwh for the first 30 kwh per day.
3.37¢ per kwh for the remaining consumption.

G1 $6.90 fixed charge per month, plus
$5.25 per kw of power billed in excess of 35 kw, plus
4.5¢ per kwh for the first 9,600 kwh.
2.6¢ per kwh for the remaining consumption.

T3 Fixed rate

19 Hydro Quebec building

79 Public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners and businesses concerned.

8.0 Annual diesel fuel consumption

Connected to La Tabatiere.

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

Connected to La Tabatiere in 1979.

13.0 Year in which grid connection is foreseen

See La Tabatiere.

14.0 Projected energy consumption for 1992

See La Tabatiere.

15.0 Inventory of building stock

Not available.

Chevery

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction	Studies: Projects:
2. Rate structure change	
3. Eliminate diesel generated electric heating	
4. Energy efficient electrical appliances and lighting	Feasibility High 1,2,3,4,5
5. Time of use measures	Low

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Completed energy studies Projects: Chevery connected to La Tabatiere in 1979. Proposed energy studies 1) Construction of a 21 MW hydro-electric plant at Robertson Lake, 18 km north of La Tabatiere, in 1987, a 25 kv power line to supply La Tabatiere and a 161 kv line, 175 km long, to supply St Augustin and Blanc Sablon. 2) Construction of a 161 kv power line, 442 km long, to supply power from Natashquan to La Tabatiere, St Augustin and Blanc Sablon.

Chevery

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects

Projects: 1. Energain (partial)
2. Completion of Energain program

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,5,8
Low	1,3,4,6,7

SOCIO-ECONOMIC PROFILE

Community: ANTICOSTI ISLAND Ecoregion: ANTICOSTI

1.0 LOCATION

The municipality of Anticosti covers an area of 4.725 square miles.

Waterways: A canal with two dikes to carry drinking water to the village.

Lakes within the community boundaries: Lac St-Georges, Lac Plantin.

The nearest settlements are Longue-Pointe-de-Mingan, 23 miles away (2 hours by boat), Grande Vallee, 40 miles away (4½ hours by boat) and Riviere-au-Renard, 40 miles away (4½ hours by boat).

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

Not available.

4.0 HISTORY

The first visitors to Anticosti Island were probably Indians or Inuit from the North Shore, who lived by hunting. The Indians named it Notishuan which means "where bears are hunted".

Jacques Cartier discovered the island on August 15, 1534, and named it Ile de l'Assomption. This is the earliest historical reference to the island. By about 1660, the name Anticosti, thought to be derived from the Spanish ante (before) and costa (coast), had come into general use.

In 1884, the island was put up for auction and bought for $101,000 by F.W. Stockwell, of Quebec City, on behalf of his brother T.G. Stockwell, who was then living in Bath, England.

In 1895, the island entered a period of prosperity when it was sold to Henri Menier, a wealthy French chocolate manufacturer, for $125,000. Menier founded the villages of Baie Ste-Claire and Port-Menier and used his personal fortune to develop the island's resources. Lumbering, agriculture and commercial lobster fishing were among the major activities he developed.

5.0 DEMOGRAPHY

YEAR	POPULATION
1971	335
1972	224

The entire population is French-speaking.

6.0 POLITICAL ORGANIZATION

Not available.

7.0 ECONOMY

7.1 Major activities

Not available.

7.2 Employment

Not available.

7.3 Occupational skills

Plumbers, electricians.

7.4 Tourism

Not available.

8.0 RENEWABLE RESOURCES

Exploitation of hunting and fishing resources dates back to the time of Louis Jolliet, who built forts on the island and lived by hunting, trapping and fishing. Menier raised foxes, developed lobster fishing and canning, cod and salmon fishing and imported different species of game, with the intention of turning the island into a hunting and fishing paradise. Until 1975, Consolidated Bathurst Ltd. ran what was probably one of the world's largest outfitting operations, equipping about 1,600 sportsmen in 1972. The island has ten hunting and fishing camps, which provide employment for some eighty people during peak season.

Reference: Notes on Anticosti Island from Consolidated Bathurst Ltd.

9.0 NON RENEWABLE RESOURCES

Not available.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Aqueduct

11.2 Sanitation

Garbage collection

12.0 TRANSPORTATION

12.1 Air facilities

Airport operation and maintenance.

12.2 Road

Not available.

12.3 Water

Not available.

13.0 COMMUNICATIONS

Television: relayed from Matane.
Microwave telephone
Radio: CK069
Telex
Mail Service

14.0 SOCIAL SERVICES

14.1 Medical

There is a clinic in Port-Menier and doctors from Gaspe provide services on a rotating basis. A dentist and an optometrist come to Port-Menier once a year.

14.2 Social services

Post office.

14.3 Protection

Not available.

14.4 Religion

Not available.

15.0 EDUCATION

Education is provided by St Joseph's Convent, Anticosti Island, which has a total enrollment of 35 students.

16.0 BASIC NEEDS

Not available.

ENERGY PROFILE

Community: ANTICOSTI (PORT MENIER)　　Ecoregion: LOWER NORTH SHORE AND ANTICOSTI

1.0 Type of electrical service (200A, 100A, 20A, no service)

60 A. and 100 A.

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Department of Recreation, Fish and Game (Hydro Quebec in 1983).

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential:

4.2 commercial:

4.3 industrial:

4.4 total: 2 362 243

5.0 Peak load (kWh): Environ 880 KW

5.1 Peak load date: December 1981.

6.0 Tarification:

At the moment, the cost of electricity is included in rents.

7.0 Rate payment profile (consumer, community, other)

Department of Recreation, Fish and Game. Hydro Quebec will take over in March 1983.

8.0 Annual diesel fuel consumption

1 100 000 litres

9.0 Annual heating oil consumption

1 576 600 litres

10.0 Total diesel fuel and heating oil consumption

2 676 600 litres

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

The Island is 35 km from the north shore and 72 km from the south shore.

13.0 Year in which grid connection is foreseen

Not foreseen.

14.0 Projected energy consumption for 1992

Not available.

15.0 Inventory of building stock

16.0 Diesel installations

42083	kW	No of Units
Caterpillar D-399 series 35B-2743	800	
Caterpillar D-348 series 36J1003	500	

Anticosti

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Distribution loss reduction 2. Rate structure change 3. Eliminate diesel generated electric heating 4. Energy efficient electrical appliances and lighting 5. Time of use measures	Studies: Projects: Feasibility High 1,2,3,4,5 Low

REPLACEMENT OPTIONS	
1. Connection to main grid 2. Mini hydro 3. Wind/diesel systems 4. Wood biomass 5. Peat biomass	Studies: Proposed energy studies Projects: Diesel generating plant - Peat biomass. Feasibility High 2,3,4,5 Low 1

Anticosti

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects

Projects: Some super-insulated homes using combination of wood and oil.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,5,6,7,8
Low	1,3,4

SOCIO-ECONOMIC PROFILE

Community: CAP-AUX-MEULES **Ecoregion**: ILES DE LA MADELEINE

1.0 LOCATION

47° 23' N
61° 53' W

2.0 TOPOGRAPHY

Major port in the centre of the archipelago.

3.0 CLIMATE

The average temperature for the warmest month is below 10°C (50°F) and for the coldest month is below -3°C (26.6°F). The climate is characterized by high humidity, frequent fog and constant winds.

4.0 HISTORY

The first inhabitants of the Islands hunted walrus and seals. Acadian families from Prince Edward Island began to settle on the Islands in 1757 and succeeding generations have lived by fishing and farming.

5.0 DEMOGRAPHY

About 1,350 people live in Cap-aux-Meules.

6.0 POLITICAL ORGANIZATION

7.0 ECONOMY

7.1 Major activities

Public services.

7.2 Employment

Not available.

7.3 Occupational skills

Electrical contractor, funeral director, etc.

7.4 Tourism

Tourism is a major economic activity for this municipality and most of the Islands' tourist accomodation is found here, along with handicraft stores and other tourist attractions. The ferryboat from Prince Edward Island docks at Cap-aux-Meules.

Local businesses: There are about 125 stores, including Sears, Quincaillerie Turbo, Maison Farrah, Centre des Economies Madeleine, and six hotel-motels.

8.0 RENEWABLE RESOURCES

Fish, wind.

9.0 NON RENEWABLE RESOURCES

None.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

System of aqueducts and wells.

11.2 Sanitation

Sewers. Garbage is collected and disposed of at the Havre-aux-Maisons dump site.

11.3 Fuel storage and delivery

Cap-aux-Meules has fuel storage facilities (Irving Oil and Imperial Oil). Fuel oil is delivered to residents by tank truck.

12.0 TRANSPORTATION

12.1 Air facilities

Quebecair and Eastern Provincial Airways provide air service to the Magdalen Islands. There are other local paved and unpaved roads.

12.2 Road

Provincial highway 199 links Cap-aux-Meules to other municipalities on the Islands. There are other local paved and unpaved roads.

12.3 Water

The ferryboat Lucy Maud Montgomery provides daily service between this commercial port and Souris, Prince Edward Island, and the Cargo M.V. Madeleine (CTMA) provides weekly service between Cap-aux-Meules and Montreal.

13.0 COMMUNICATIONS

Telephone services are provided by Telebec Ltee. The Islands have their own community radio station, CFIM-FM, and other stations can also be picked up. Television service is provided by the CBC. There is a weekly regional newspaper, Le Radar, and other Quebec newspapers are also available.

The community also has Canadian Coast Guard station and a weather office.

14.0 SOCIAL SERVICES

14.1 Medical

The Magdalen Islands' health centre is at Cap-aux-Meules. It has 30 long-term beds, 52 short-term beds, 21 beds in the nursing home, 11 general practitioners, 1 surgeon, 73 registered nurses, 74 nursing assistants, a dental clinic and optometry services.

14.2 Social services

There is a CLSC, a CRSSS and the Ville Plaisance nursing home.

14.3 Protection

Quebec Police Force
St John's Ambulance
Ambulance service
Intermunicipal fire department
Municipal emergency action committee.

14.4 Religion

Catholic.

15.0 EDUCATION

School: one elementary school.
Students: 154
Education authority: Commission Scolaire des Iles.
Post-elementary education and training: Secondary education is offered by the Islands' secondary school in Etang-du-Nord. Adult education services are also provided.

16.0 BASIC NEEDS

Extension of sewer system. Improvements to aqueduct system. Improvements to port facilities. New road to reduce traffic in the business district.

ENERGY PROFILE

Community: CAP AUX MEULES Ecoregion: ILES DE LA MADELEINE

1.0 Type of electrical service (200A, 100A, 20A, no service)

Details to follow.

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 9 650 890

4.2 commercial:

4.3 industrial:

4.4 total:

5.0 Peak load (kWh): 5 400

5.1 Peak load date: 82-01-21

6.0 Tarification:

In accordance with by-law #290, D,G,M and public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners.

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

15.0 Inventory of building stock

Not available.

Cap-aux-Meules

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies: Proposed energy studies
Projects: Power plant: Study being undertaken with a view of making the most efficient use of the plant and distribution system.

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:
Projects:

Feasibility
High 1 (cable P.E.I.),3

Low 2,4,5

Cap-Aux-Meules

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Proposed energy efficiency projects

Projects: Completion of implementation of EEPMI.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies: Proposed energy studies

Projects: Urban heating: Technico-economic feasibility study completed. Proposal still being studied.

Feasibility

High	2,4,5,8
Low	1,3,6,7

SOCIO-ECONOMIC PROFILE

Community: GRANDE ENTREE Ecoregion: MAGDALEN ISLANDS

1.0 LOCATION

62° 13' N
47° 51' W

2.0 TOPOGRAPHY

Grande-Entree is a small island in the north of the archipelago.

3.0 CLIMATE

The average temperature for the warmest month is below 10°C (50°F) and for the coldest month is below -3°C (26.6°F). The climate is characterized by high humidity, frequent fog and constant winds.

4.0 HISTORY

The first inhabitants of the Islands hunted walrus and seals. Acadian families from Prince Edward Island began to settle on the Islands in 1757 and succeeding generations have lived by fishing and farming.

5.0 DEMOGRAPHY

About 979 people live on the island.

6.0 POLITICAL ORGANIZATION

Legal status: The island became a municipality on August 5, 1929.

Mayor: Jacques Chevarie.

7.0 ECONOMY

7.1 Major activities

Fishing

7.2 Employment

Not available

7.3 Occupational skills

One machinery contractor

7.4 Tourism

The island's main tourist attractions are its fishing port, Ile Boudreau and La Pointe.

8.0 RENEWABLE RESOURCES

Fish, wind.

9.0 NON RENEWABLE RESOURCES

None.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Individual wells. These are plans to build an aqueduct that will serve part of the population.

11.2 Sanitation

Garbage is collected and then disposed of at the Grosse-Ile dump site. Islanders have individual septic tanks.

11.3 Fuel storage and delivery

Irving Oil Ltd delivers fuel oil by tank truck.

12.0 TRANSPORTATION

12.1 Air facilities

Quebecair and Eastern Provincial Airways provide air service to the Magdalen Islands. The airport is at Havre-aux-Maisons.

12.2 Road

Provincial highway 199 links Grande-Entree to other municipalities on the Islands. There are other local paved and unpaved roads.

12.3 Water

The ferryboat Lucy Maud Montgomery provides daily service between Cap-aux-Meules and Souris, Prince Edward Island, and the Cargo M.V. Madeleine (CTMA) provides weekly service between Cap-aux-Meules and Montreal.

13.0 COMMUNICATIONS

Telephone services are provided by Telebec Ltee. The Islands have their own community radio station, CFIM-FM, and other stations can also be picked up. Television service is provided by the CBC. There is a weekly regional newspaper, Le Radar, and other Quebec newspapers are also available.

14.0 SOCIAL SERVICES

14.1 Medical

The island has a small clinic and one nurse.

14.2 Social services

Cap-aux-Meules has a CLSC, a CRSSS and a CTT.

14.3 Protection

Quebec Police Force, Cap-aux-Maules
St John's Ambulance
Municipal emergency action committee

14.4 Religion

Catholic.

15.0 EDUCATION

School: one elementary school.
Students: 105
Education authority: Commission Scolaire des Iles.
Post-elementary education and training: Secondary education is offered by the Islands' secondary school in Etang-du-Nord, which also has an adult education program.

16.0 BASIC NEEDS

Aqueduct. Waste water treatment facilities. Waste management.

ENERGY PROFILE

Community: GRANDE ENTREE Ecoregion: MAGDALEN ISLANDS

1.0 Type of electrical service (200A, 100A, 20A, no service)

Details to follow.

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 3 967 510

4.2 commercial:

4.3 industrial:

4.4 total:

5.0 Peak load (kWh): 1 400 KW

5.1 Peak load date: 82-01-21

6.0 Tarification:

In accordance with by-law #290, D,G,M and public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners.

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

15.0 Inventory of building stock

Not available.

Grande-Entree

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:
Projects:

Feasibility
High 1 (cable),3

Low 2,4,5

Grande-Entree

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects
Projects: Partial implementation of EEPMI.

Proposed energy efficiency projects
1. Completion of implementation of EEPMI.
2. Exploitation of existing wind resources.

Completed energy studies
Inventory of residences and energy use.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,4,5,8
Low	1,3,6,7

SOCIO-ECONOMIC PROFILE

Community: FATIMA **Ecoregion**: MAGDALEN ISLANDS

1.0 LOCATION

47° 23' N
61° 53' W

2.0 TOPOGRAPHY

Fatima is an island in the centre of the archipelago.

3.0 CLIMATE

The average temperature for the warmest month is below 10°C (50°F) and for the coldest month is below -3°C (26.6°F). The climate is characterized by high humidity, frequent fog and constant winds.

4.0 HISTORY

The first inhabitants of the Islands hunted walrus and seals. Acadian families from Prince Edward Island began to settle on the Islands in 1757 and succeeding generations have lived by fishing and farming.

5.0 DEMOGRAPHY

About 3,109 people live on the island.

6.0 POLITICAL ORGANIZATION

Legal status: The island became a municipality on January 1, 1959.
Mayor: Marc-Edouard Nadeau.

7.0 ECONOMY

7.1 Major activities

Public services and fishing.

7.2 Employment

Not available.

7.3 Occupational skills

Machine shops, excavation contractor, electrical contractor.

7.4 Tourism

The island's main tourist attractions are its beach and butte. Tourists also enjoy fishing for mollusks. There is one campground and one hotel-motel and accomodation is also offered in private homes.

Local businesses: There are about 40 local businesses, including the Co-op L'Eveil, a family bargain store, hairdressing salons, a grocery store, a bar, restaurants and various other services.

8.0 RENEWABLE RESOURCES

Fish, wind.

9.0 NON RENEWABLE RESOURCES

None

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

System of aqueducts and wells.

11.2 Sanitation

Garbage is collected and disposed of at the Havre-aux-Maisons dump site.

11.3 Fuel storage and delivery

Fuel oil is stored at Cap-aux-Meules and delivered to islanders by tank truck (Irving Oil and Imperial Oil).

12.0 TRANSPORTATION

12.1 Air facilities

Quebecair and Eastern Provincial Airways provide air service to the Magdalen Islands. The airport is at Havre-aux-Maisons.

12.2 Road

Provincial highway 199 links Fatima to other municipalities on the Islands. There are other local paved and unpaved roads.

12.3 Water

The ferryboat Lucy Maud Montgomery provides daily service between Cap-aux-Meules and Souris, Prince Edward Island, and the Cargo M.V. Madeleine (CTMA) provides weekly service between Cap-aux-Meules and Montreal.

13.0 COMMUNICATIONS

Telephone services are provided by Telebec Ltee. The Islands have their own community radio station, CFIM-FM, and other stations can also be picked up. Television service is provided by the CBC. There is a weekly regional newspaper, Le Radar, and other Quebec newspapers are also available.

14.0 SOCIAL SERVICES

14.1 Medical

There is a hospital in Cap-aux-Meules.

14.2 Social services

Cap-aux-Meules has a CLSC, a CRSSS and a CTT.

14.3 Protection

Quebec Police Force
St John's Ambulance
Municipal emergency action committee
Intermunicipal fire department.

14.4 Religion

Catholic.

15.0 EDUCATION

School: one elementary school.
Students: 360
Education authority: Commission Scolaire des Iles.
Post-elementary education and training: The school board offers an adult education program.

16.0 BASIC NEEDS

Construction of a fishing harbour. Sewers. Solid waste management. Improvements to road system.

ENERGY PROFILE

Community: FATIMA Ecoregion: MAGDALEN ISLANDS

1.0 Type of electrical service (200A, 100A, 20A, no service)

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 16 182 820

4.2 commercial:

4.3 industrial:

4.4 total:

5.0 Peak load (kWh): 5 500 kW

5.1 Peak load date: 82-01-21

6.0 Tarification:

In accordance with by-law #290, D,G,M and public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners.

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

15.0 Inventory of building stock

Not available.

Fatima

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS — **STUDIES AND FEASIBILITY**

---

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

Studies:
Projects:

Feasibility
High 1,2,3,4,5
Low

REPLACEMENT OPTIONS

---

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:
Projects:

Feasibility
High 3
Low 1,2,4,5

Fatima

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects
Projects: Partial implementation of EEPMI.

Proposed energy efficiency projects
1. Completion of implementation of EEPMI.
2. Exploitation of existing wind resources.

Completed energy studies
Inventory of residences and energy use.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	1 (cable P.E.I.),2,4,5,8
Low	3,6,7

SOCIO-ECONOMIC PROFILE

Community: GROSSE-ILE Ecoregion: MAGDALEN ISLANDS

1.0 LOCATION

62° 13' N
47° 51' W

2.0 TOPOGRAPHY

Not available.

3.0 CLIMATE

The average temperature for the warmest month is below 10°C (50°F) and for the coldest month is below -3°C (26.6°F). The climate is characterized by high humidity, frequent fog and constant winds.

4.0 HISTORY

The first inhabitants of the Islands hunted walrus and seals. Acadian families from Prince Edward Island began to settle on the Islands in 1757 and succeeding generations have lived by fishing and farming.

5.0 DEMOGRAPHY

Five hundred and twenty-three people live on the island.

6.0 POLITICAL ORGANIZATION

Legal status: The island became a municipality on January 1, 1893.
Mayor: Ruth Clarke.

7.0 ECONOMY

7.1 Major activities

Fishing and salt mining.

7.2 Employment

Not available.

7.3 Occupational skills

None mentioned.

7.4 Tourism

The island's main tourist attractions are the beaches and sand dunes, the National Wildlife Area, the salt mine and the fishing port.

8.0 RENEWABLE RESOURCES

Fish, wind.

9.0 NON RENEWABLE RESOURCES

Salt mine.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Individual wells.

11.2 Sanitation

Individual septic tanks. Garbage is collected and then disposed of at a local dump site.

11.3 Fuel storage and delivery

Fuel oil is stored on Grande-Entree and delivered to residents of Grosse-Ile by tank truck (Irving Oil Ltd.).

12.0 TRANSPORTATION

12.1 Air facilities

The regional airport is at Havre-aux-Maisons.

12.2 Road

The island is served by provincial highway 199 and municipal roads, most of which are paved.

12.3 Water

There is a daily ferry service between the Islands and Prince Edward Island, and the Cargo M.V. Madeleine (CTMA) provides weekly service between Montreal and Cap-aux-Meules.

13.0 COMMUNICATIONS

Telephone services are provided by Telebec Ltee. The islands have their own community radio station, CFIM-FM, and other stations can also be picked up. Television service is provided by the CBC.

14.0 SOCIAL SERVICES

14.1 Medical

The island has a small clinic and one nurse.

14.2 Social services

Cap-aux-Meules has a CLSC, a CRSSS and a CTT.

14.3 Protection

Quebec Police Force, Cap-aux-Meules
St John's Ambulance
Municipal emergency action committee

14.4 Religion

Catholic and Protestant.

15.0 EDUCATION

School: one school offering elementary and secondary education.
Students: 110
Education authority: Gaspesia School Board
Post-secondary education and training: Not available.

16.0 BASIC NEEDS

Waste management. Waste water treatment facilities.

ENERGY PROFILE

Community: GROSSE-ILE Ecoregion: MAGDALEN ISLANDS

1.0 Type of electrical service (200A, 100A, 20A, no service)

Details to follow.

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 1 624 180

4.2 commercial:

4.3 industrial:

4.4 total:

5.0 Peak load (kWh): 600 kW

5.1 Peak load date: About 82-01-21

6.0 Tarification:

In accordance with by-law #290, D,G,M and public lighting.

7.0 Rate payment profile (consumer, community, other)

Homw-owners.

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

15.0 Inventory of building stock

Not available.

Grosse-Ile

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:
Projects:

Feasibility
High 1 (cable P.E.I.),3

Low 2,4,5

Grosse-Ile

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit 2. Insulation retrofit 3. Air envelope retrofit 4. Window/door retrofit 5. Super-efficient norms for new construction 6. Set-back thermostat 7. Hot water heating conservation measures 8. Higher efficiency furnace retrofit 9. Heat pumps 10. Waste heat recovery 11. Energy conservation education	Studies: Proposed energy efficiency projects Projects: 1. Completion of implementation of EEPMI. Completed energy studies Inventory of residences and energy use. Feasibility High 1,2,3,4,5,6,7,8,10,11 Low 9
REPLACEMNT OPTIONS	
1. Connection to main grid 2. Rate structure change for oil based electrical heating 3. Cogeneration 4. District heating 5. Wind systems 6. Wood systems 7. Peat systems 8. Active solar	Studies: Projects: Feasibility High 2,4,5,8 Low 1,3,6,7

SOCIO-ECONOMIC PROFILE

Community: ETANG-DU-NORD   Ecoregion: MAGDALEN ISLANDS

1.0 LOCATION

47° 23' N
61° 53' W

2.0 TOPOGRAPHY

Etang-du-Nord is a village on the west coast of Cap-aux-Meules island.

3.0 CLIMATE

The average temperature for the warmest month is below 10°C (50°F) and for the coldest month is below -3°C (26.6°F). The climate is characterized by high humidity, frequent fog and constant winds.

4.0 HISTORY

The first inhabitants of the Islands hunted walrus and seals. Acadian families from Prince Edward Island began to settle on the Islands in 1757 and succeeding generations have lived by fishing and farming.

5.0 DEMOGRAPHY

The population of Etang-du-Nord is 2,702.

6.0 POLITICAL ORGANIZATION

Legal status: The village became a municipality on January 1, 1875.
Mayor: Lucien Landry.

7.0 ECONOMY

7.1 Major activities

Fishing

7.2 Employment

Not available.

7.3 Occupational skills

Boat building, general construction, excavation, et.

7.4 Tourism

Main tourist attractions: fishing port, golf course, summer theatre, lobster ground at Gros-Cap, butte, Laverniere church.

Local businesses: There are about 45 local businesses, including grocery stores, garages, restaurants, a motel, butchers and various other services. There is also a shopping centre called Place des Iles.

8.0 RENEWABLE RESOURCES

Fish, wind, Hydro Quebec.

9.0 NON RENEWABLE RESOURCES

None

10.0 PRICES AND INCOME

Not available

11.0 INFRASTRUCTURE

11.1 Water

System of aqueducts and wells.

11.2 Sanitation

Individual sewers. Garbage is collected and disposed of at Havre-Aubert.

11.3 Fuel storage and delivery

Fuel oil is stored at Cap-aux-Meules (Irving Oil and Imperial Oil) and delivered to residents by tank truck.

12.0 TRANSPORTATION

12.1 Air facilities

Quebecair and Eastern Provincial Airways provide air service to the Magdalen Islands. The airport is at Havre-aux-Maisons.

12.2 Road

Provincial highway 199 links Etang-du-Nord to other municipalities on the Islands. There are other local paved and unpaved roads.

12.3 Water

The ferryboat Lucy Maud Montgomery provides daily service between Cap-aux-Meules and Souris, Prince Edward Island, and the Cargo MV Madeleine (CTMA) provides weekly service between Cap-aux-Meules and Montreal.

13.0 COMMUNICATIONS

Telephone services are provided by Telebec Ltee. The Islands have their own community radio station, CFIM-FM, and other stations can also be picked up. Television service is provided by the CBC. There is a weekly regional newspaper, Le Radar, and other Quebec newspapers are also available.

14.0 SOCIAL SERVICES

14.1 Medical

There is a hospital in Cap-aux-Meules.

14.2 Social services

Cap-aux-Meules has a CLSC, a CRSSS and a CTT.

14.3 Protection

Quebec Police Force
St John's Ambulance
Municipal emergency action committee
Intermunicipal fire department

14.4 Religion

Catholic

15.0 EDUCATION

Schools: One elementary school and one secondary school
Students: 335 elementary and 1359 secondary
Fducation authority: Commission Scolaire des Iles
Post-secondary education and training: The school board has an adult education program.

16.0 BASIC NEEDS

Sewers. Waste management. Street lighting. Improvement to road system and other municipal services.

ENERGY PROFILE

Community: ETANG-DU-NORD Ecoregion: MAGDALEN ISLANDS

1.0 Type of electrical service (200A, 100A, 20A, no service)

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 16 717 850

4.2 commercial:

4.3 industrial:

4.4 total:

5.0 Peak load (kWh): 4 400 kW

5.1 Peak load date: About 82-01-21

6.0 Tarification:

In accordance with by-law #290, D,G,M and public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners.

8.0 Annual diesel fuel consumption

Not available.

9.0 Annual heating oil consumption

Not available.

10.0 Total diesel fuel and heating oil consumption

Not available.

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

15.0 Inventory of building stock

Not available.

Etang-du-Nord

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS — STUDIES AND FEASIBILITY

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

Studies:
Projects:

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:
Projects:

Feasibility
High 1 (cable P.E.I),3

Low 2,4,5

Etang-du-Nord

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS	STUDIES AND FEASIBILITY
1. Building energy audit 2. Insulation retrofit 3. Air envelope retrofit 4. Window/door retrofit 5. Super-efficient norms for new construction 6. Set-back thermostat 7. Hot water heating conservation measures 8. Higher efficiency furnace retrofit 9. Heat pumps 10. Waste heat recovery 11. Energy conservation education	Studies: Completed energy efficiency projects Projects: Partial implementation of EEPMI. Proposed energy efficiency projects 1. Completion of implementation of EEPMI. Completed energy studies Inventory of residences and energy use. Feasibility High 1,2,3,4,5,6,7,8,10,11 Low 9
REPLACEMNT OPTIONS	
1. Connection to main grid 2. Rate structure change for oil based electrical heating 3. Cogeneration 4. District heating 5. Wind systems 6. Wood systems 7. Peat systems 8. Active solar	Studies: Projects: Feasibility High 2,4,5,8 Low 1,3,6,7

SOCIO-ECONOMIC PROFILE

Community: HAVRE-AUX-MAISONS Ecoregion: MAGDALEN ISLANDS

1.0 LOCATION

47° 23' N
61° 53' W

2.0 TOPOGRAPHY

Havre-aux-Maisons is an island to the east of Cap-aux-Meules island.

3.0 CLIMATE

The average temperature for the warmest month is below 10°C (50°F) and for the coldest month is below -3°C (26.6°F). The climate is characterized by high humidity, frequent fog and constant winds.

4.0 HISTORY

The first inhabitants of the Islands hunted walrus and seals. Acadian families from Prince Edward Island began to settle on the Islands in 1757 and succeeding generations have lived by fishing and farming.

5.0 DEMOGRAPHY

The island has a population of 2,500.

6.0 POLITICAL ORGANIZATION

Legal status: The island became a municipality on January 1, 1875.
Mayor: Benoit Arseneau.

7.0 ECONOMY

7.1 Major activities

Fishing.

7.2 Employment

Not available.

7.3 Occupational skills

Ceramics and pottery centre.
Glass blowing.

7.4 Tourism

Tourist attractions: windmill, pottery and glass workshops, herring smokehouse, lighthouse, fishing for mollusks.

Local businesses: There are about 35 local businesses, including shops, grocery stores, garages, restaurants, motels and various other services.

8.0 RENEWABLE RESOURCES

Fish, wind.

9.0 NON RENEWABLE RESOURCES

None.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

System of aqueducts and wells.

11.2 Sanitation

Garbage is collected and then disposed of at a local dump site. There is no municipal sewer system. Islanders have individual septic tanks.

11.3 Fuel storage and delivery

Fuel oil is stored at Cap-aux-Meules (Irving Oil Co. and Imperial Oil) and delivered to residents by tank truck.

12.0 TRANSPORTATION

12.1 Air facilities

The regional airport is at Havre-aux-Maisons.

12.2 Road

The island is served by provincial highway 199 and municipal roads, most of which are paved.

12.3 Water

There is a daily ferry service between the Islands and Prince Edward Island and the Cargo MV Madeleine (CTMA) provides weekly service between Montreal and Cap-aux-Meules.

13.0 COMMUNICATIONS

Telephone services are provided by Telebec Ltee. The Islands have their own community radio station, CFIM-FM, and other stations can also be picked up. Television service is provided by the CBC.

14.0 SOCIAL SERVICES

14.1 Medical

There is a hospital in Cap-aux-Meules.

14.2 Social services

Cap-aux-Meules has a CLSC, a CRSSS and a CTT.

14.3 Protection

Quebec Police Force
St John's Ambulance
Municipal emergency action committee
Intermunicipal fire department.

14.4 Religion

Catholic.

15.0 EDUCATION

School: one elementary school.
Students: 243
Education authority: Commission Scolaire des Iles
Post-elementary education and training: Secondary education is offered by the Islands' secondary school in Etang-du-Nord and the school board has an adult education program.

16.0 BASIC NEEDS

New wells for drinking water. Waste management. Waste water treatment facilities.

ENERGY PROFILE

Community: HAVRE-AUX-MAISONS Ecoregion: MAGDALEN ISLANDS

1.0 Type of electrical service (200A, 100A, 20A, no service)

Details to follow.

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 11 119 850

4.2 commercial:

4.3 industrial:

4.4 total:

5.0 Peak load (kWh): 3 700 kW

5.1 Peak load date: About 82-01-21

6.0 Tarification:

In accordance with by law #290, D,G,M and public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners.

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

15.0 Inventory of building stock

Not available.

Havre-aux-Maisons

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies: Proposed energy studies
Projects:

Feasibility
High 1 (cable P.E.I.),3

Low 2,4,5

Havre-aux-Maisons

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects
Projects: Partial implementation of EEMPI.

Proposed energy efficiency projects
1. Completion of implementation of EEMPI.
2. Exploitation of existing wind resources.

Completed energy studies
Inventory of residences and energy use.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,4,5,8
Low	1,3,6,7

SOCIO-ECONOMIC PROFILE

Community: ILE D'ENTREE **Ecoregion:** MAGDALEN ISLANDS

1.0 LOCATION

47° 17' N
61° 42' W

2.0 TOPOGRAPHY

Ile d'Entree is a separate island in the south of the archipelago.

3.0 CLIMATE

The average temperature for the warmest month is below 10°C (50°F) and for the coldest month is below -3°C (26.6°F). The climate is characterized by high humidity, frequent fog and constant winds.

4.0 HISTORY

The first inhabitants of the Islands hunted walrus and seals. Acadian families from Prince Edward Island began to settle on the Islands in 1757 and succeeding generations have lived by fishing and farming.

5.0 DEMOGRAPHY

About 154 people live on the island.

6.0 POLITICAL ORGANIZATION

Legal status: The island became a municipality in 1965.
Mayor: Yvan Quinn.

7.0 ECONOMY

7.1 Major activities

Fishing.

7.2 Employment

Not available.

7.3 Occupational skills

None.

7.4 Tourism

Tourists are generally drawn to the island because they can find peace and quiet. There is no tourist accomodation apart from wilderness camping.

Local businesses: There are very few local businesses - just two or three small grocery stores.

8.0 RENEWABLE RESOURCES

Fish, wind.

9.0 NON RENEWABLE RESOURCES

None.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

Individual wells.

11.2 Sanitation

There is no sewer system or garbage collections.

11.3 Fuel storage and delivery

Fuel is delivered by the boat that links Ile d'Entree with Cap-aux-Meules.

12.0 TRANSPORTATION

12.1 Air facilities

A local airline company operates flights between the island and Havre-aux-Maisons.

12.2 Road

There is one narrow unpaved road.

12.3 Water

A small ferry provides daily service between the island and Cap-aux-Meules, except in winter.

13.0 COMMUNICATIONS

Telephone services are provided by Telebec Ltee. The Islands have their own community radio station, CFIM-FM, and other stations can also be picked up. Television service is provided by the CBC.

14.0 SOCIAL SERVICES

14.1 Medical

The island has a small clinic and one nurse. Patients who need special care are taken to the Islands' health centre.

14.2 Social services

There is a CLSC in Cap-aux-Meules.

14.3 Protection

Law enforcement services are provided by the Quebec Police Force stationed in Cap-aux-Meules. There are no local police officers.

14.4 Religion

Protestant.

15.0 EDUCATION

School: one elementary school.
Students: approximately 35
Education authority: Gaspesia School Board.
Post-elementary education and training: Students who wish to take secondary or university courses have to leave the Islands. Those from Ile d'Entree generally go to the Maritimes.

16.0 BASIC NEEDS

Aqueduct for drinking water.
Waste water treatment facilities.
Solid waste management.

ENERGY PROFILE

Community: ILE D'ENTREE Ecoregion: MAGDALEN ISLANDS

1.0 Type of electrical service (200A, 100A, 20A, no service)

Details to follow.

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 775 560 (1981)

4.2 commercial: 170 280 (1981)

4.3 industrial:

4.4 total: 945 840

5.0 Peak load (kWh)

5.1 Peak load date:

6.0 Tarification:

In accordance with by-law #290, D,G,M and public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners.

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

15.0 Inventory of building stock

Not available.

Ile D'Entree

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies: Proposed energy studies
Projects: Power plant: Study being undertaken with a view to making the most efficient use of the plant and distribution system.

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:
Projects:

Feasibility
High 1 (cable P.E.I.),3

Low 2,4,5

Ile D'Entree

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

STUDIES AND FEASIBILITY

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1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

Studies: Completed energy efficiency projects
Projects: Partial Implementation of EEPMI. (See Annex 4, Details for week ending October 29,1982).

Proposed energy efficiency projects
1. Completion of implementation of EEMPI.

Completed energy studies
Inventory of residences and energy use.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

---

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:
Projects:

Feasibility

High	2,4,5,8
Low	1,3,6,7

SOCIO-ECONOMIC PROFILE

Community: ILE DU HAVRE-AUBERT Ecoregion: MAGDALEN ISLANDS

1.0 LOCATION

47° 17' N
61° 42' W

2.0 TOPOGRAPHY

Havre-Aubert is an island in the south of the archipelago.

3.0 CLIMATE

The average temperature for the warmest month is below 10°C (50°F) and for the coldest month is below -3°C (26.6°F). The climate is characterized by high humitidy, frequent fog and constant winds.

4.0 HISTORY

The first inhabitants of the Islands hunted walrus and seals. Acadian families from Prince Edward Island began to settle on the Islands in 1757 and succeeding generations have lived by fishing and farming.

5.0 DEMOGRAPHY

The population of this island is 2,974, and in 1980 the average age was 30.9. The population is increasing by 7.6% per year (1979).

6.0 POLITICAL ORGANIZATION

The island became a municipality in 1875. In 1951, two separate municipalities - Havre-Aubert and Basson - were formed. In 1971, they amalgamated to form the municipality of Ile du Havre-Aubert.
Mayor: John Chiasson.

7.0 ECONOMY

7.1 Major activities

Fishing and fish processing.

7.2 Employment

Fishing - 24%
Fish processing - 28%
Services - 20%
Trade - 15%
Tourism - 23%

7.3 Occupational skills

One residential construction contractor
One trucking and excavating firm.

7.4 Tourism

Tourism is a major economic activity for this community. Among the main tourist attractions are the marine museum, beaches, campgrounds and a sailing school.

Local businesses: There are about 40 local businesses, including general and specialized stores, restaurants and grocery stores.

8.0 RENEWABLE RESOURCES

Fish, wind.

9.0 NON RENEWABLE RESOURCES

None. Manganese and salt resources are not exploited.

10.0 PRICES AND INCOME

Not available.

11.0 INFRASTRUCTURE

11.1 Water

System of aqueducts and wells.

11.2 Sanitation

Garbage is collected regularly and disposed of at the municipal dump site. There is no sewer service.

11.3 Fuel storage and delivery

Irving Oil operates a fuel storage depot.

12.0 TRANSPORTATION

12.1 Air facilities

Quebecair and Eastern Provincial Airways provide air service to the Magdalen Islands. The airport is at Havre-aux-Maisons.

12.2 Road

Provincial highway 199 links Ile du Havre-Aubert to other municipalities on the Islands. There are other local unpaved roads.

12.3 Water

The ferryboat Lucy Maud Montgomery provides daily service between Cap-aux-Meules and Souris, Prince Edward Island, and the Cargo MV Madeleine (CTMA) provides weekly service between the Islands and Montreal.

13.0 COMMUNICATIONS

Telephone services are provided by Telebec Ltee. The Islands have their own community radio station, CFIM-FM, and other stations can also be picked up. Television service is provided by the CBC. There is a weekly regional newspaper, Le Radar, and other Quebec newspapers are also available.

14.0 SOCIAL SERVICES

14.1 Medical

One small clinic.

14.2 Social services

Cap-aux-Meules has a CLSC, a CRSSS and a CTT.

14.3 Protection

Quebec Police Force, stationed at Cap-aux-Meules
St John's Ambulance
Municipal emergency action committee
Volunteer firemen.

14.4 Religion

Catholic.

15.0 EDUCATION

Schools: two elementary schools.
Students: 305
Education authority: Commission Scolaire des Iles.
Post-elementary education and training: The school board has an adult education program. Secondary school education is provided by the Islands' secondary school in Etang-du-Nord.

16.0 BASIC NEEDS

Extension of aqueduct system. Sewers. Solid waste management. Job creation and development.

ENERGY PROFILE

Community: HAVRE AUBERT Ecoregion: MAGDALEN ISLANDS

1.0 Type of electrical service (200A, 100A, 20A, no service)

2.0 Supplier of electrical service (utility, industry, DINA, etc.)

Hydro Quebec

3.0 Source of electrical service (diesel, hydro, other)

Diesel

4.0 Annual electrical demand (kWh)

4.1 residential: 11 238 140

4.2 commercial:

4.3 industrial:

4.4 total:

5.0 Peak load (kWh): 5 500 kW

5.1 Peak load date: 82-01-21

6.0 Tarification:

In accordance with by-law #290, D,G,M and public lighting.

7.0 Rate payment profile (consumer, community, other)

Home-owners.

8.0 Annual diesel fuel consumption

9.0 Annual heating oil consumption

10.0 Total diesel fuel and heating oil consumption

11.0 Delivered cost of diesel fuel 11.1 Delivered cost of heating oil

12.0 Distance to nearest grid point

13.0 Year in which grid connection is foreseen

14.0 Projected energy consumption for 1992

15.0 Inventory of building stock

Not available.

Havre-Aubert

ECONOMY/REPLACEMENT OPTIONS

DIESEL ELECTRICAL GENERATION

ECONOMY OPTIONS

1. Distribution loss reduction
2. Rate structure change
3. Eliminate diesel generated electric heating
4. Energy efficient electrical appliances and lighting
5. Time of use measures

STUDIES AND FEASIBILITY

Studies:
Projects:

Feasibility

High 1,2,3,4,5

Low

REPLACEMENT OPTIONS

1. Connection to main grid
2. Mini hydro
3. Wind/diesel systems
4. Wood biomass
5. Peat biomass

Studies:
Projects:

Feasibility
High 1 (cable),3

Low 2,4,5

Havre-Aubert

ECONOMY/REPLACEMENT OPTIONS

OIL-BASED HEATING

ECONOMY OPTIONS

1. Building energy audit
2. Insulation retrofit
3. Air envelope retrofit
4. Window/door retrofit
5. Super-efficient norms for new construction
6. Set-back thermostat
7. Hot water heating conservation measures
8. Higher efficiency furnace retrofit
9. Heat pumps
10. Waste heat recovery
11. Energy conservation education

STUDIES AND FEASIBILITY

Studies: Completed energy efficiency projects

Projects: Partial implementation of EEPMI.

Proposed energy efficiency projects

1. Completion of implementation of EEPMI.

Completed energy studies

Inventory of residences and energy use.

Feasibility

High	1,2,3,4,5,6,7,8,10,11
Low	9

REPLACEMNT OPTIONS

1. Connection to main grid
2. Rate structure change for oil based electrical heating
3. Cogeneration
4. District heating
5. Wind systems
6. Wood systems
7. Peat systems
8. Active solar

Studies:

Projects:

Feasibility

High	1 (cable P.E.I.),2,4,5,8
Low	3,6,7